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July–August 2005

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THE MISSOURI'S WATER WARS

JOHN LAMBING

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Luke Duran, Art Director
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Montana Outdoors

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OPPOSITE PAGE: Does the Missouri River begin in the Centennial Mountains (shown here, as viewed from the Gravelly Range)? Find out in our story on page 10. Photo by John Lambing.

COVER: See page 22 to learn how to identify the colorful western tanager and many other birds. Photo by Donald M. Jones.

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Public loses

Your article "Little Dams, Big Barriers" (May–June) presenred only one example of what is a statewide problem. Unlike other states in the Northwest that have long required diversions to have effective fish screens, unscreened diversions abound throughout Montana wherever water is diverted. These range from the major ditch diversions on the Yellowstone, usually with attendant dams, to lesser but proportionately just as damaging pump diversions across the state.

The article quoted one irrigation manager as saying that the dams are a "huge economic success." That may be because those who benefit from the water don't have to compensate the public for the fish lost due to diversions. The public loses in other ways, too. Most major diversions were built and are maintained with public money. And it's public money that pays most of the costs to retrofit dams to prorect fish. On the 12-Mile Diversion Dam, for example, irrigators paid just $60,000 of the $900,000 total cost. Many people say government should be run more like a business. If it were, however, the current situation with diversion dams would not be tolerated.

These comments are not intended in any way to disparage Roger Muggli and what he has accomplished on the Tongue River. He should be applauded for his efforts.

Duane E. Phinney
Hoodsport, Washington

Still teaching us

The article on captures and observations of fish by members of the Lewis and Clark Expedition ("A Different Angle on the Expedition," May–June) by Nick Gevock was very interesting, but it repeated a common error about the identity of the "ten or a douzen of a whte speceis of trout" [sic] Lewis described seeing for the first time among 528 fish, mostly trout, captured by "bush drag" on August 22, 1805. These fish were caught on the Beaverhead River, not Idaho's Lemhi River [where, one week earlier, Lewis had met the Shoshone chief Cameahwait and dined on his first Pacific Coast salmon], and could not have been steelhead, which are not native to the Missouri River system. Instead, the description by Lewis of silvery troutlike fish with scales "much larger" than those of "speckled trout" (brook trout) but otherwise "are precisely like them" in other characteristics such as fins, mouth, and teeth indicates that it was very likely the arctic grayling. Lewis also mentioned that the new fish were "smaller" (apparently compared to brook trout), suggesting the fish were juvenile arctic grayling, which don't have the large dorsal fin conspicuous on mature male grayling. A scientific survey in 1891 found arctic grayling still common in the Red Rock and Beaverhead rivers near the former expedition campsite, although the species has since disappeared from these and most other streams of the upper Missouri drainage.

Calvin M. Kaya
Professor Emeritus of Biology
Montana State University, Bozeman

EDITOR REPLIES: *Professor Kaya is correct. In* The Journals of the Lewis & Clark Expedition, *Vol. 5, published in 1988, editor Gary Moulton's footnote for Lewis's August 22 entry, in which the captain makes mention of the "white trout," reads: "Perhaps [this species is] the steelhead trout,* Salmo gairdneri, *which they refer to elsewhere as the 'salmen trout.' If so, this would be the first description...." However, Kaya and several other biologists have since pointed out there were no steelhead on the Montana side of the Continental Divide, where Lewis was camped when members of his crew caught the "white trout."*

"Those are <u>not</u> the type of people you tell your 'First Time I Skinned a Raccoon' story to."

Not blowing smoke

In an otherwise wonderful March–April issue, I spotted an error on the back cover. If I'm not mistaken, those flowers are called prairie smoke, not pasqueflowers.

Ed Martinson
Missoula

EDITOR REPLIES: *Several other readers let us know they thought we flubbed our forb identification. But the plants shown are in fact pasqueflowers, otherwise known as prairie crocuses. To be doubly sure, however, we called upon Drake Barton of Helena, a botanist and board member of the Montana Native Plant Society. He says the post-bloom crocus can look like the prairie smoke, but in fact the plants are in two completely different families. "The prairie smoke (*Geum triflorum*) is in the rose family, while the pasqueflower (*Pulsatilla patens*) is a member of the buttercup family," Barton says. "And a prairie smoke has flowers in groups of three—which is noted in the species name* triflorum*—while the pasqueflower has a single flower on each stem. The confusion comes mainly because most pictures of pasqueflowers are of the flowering stage, showing the bluish or lavender cup-shaped flowers, not the post-bloom stage, which you have in this photograph."*

■ We welcome your comments, questions, and letters to the editor. We'll edit letters as needed for accuracy, style, and length. Mail your letter to: *Montana Outdoors*, P.O. Box 200701, Helena, MT 59620-0701. Or e-mail us at: tdickson@mt.gov.

Bullish on Bull Trout

Reports on endangered species are usually gloomy, but that's not so with bull trout in Montana.

A close cousin to nonnative lake and brook trout, bull trout are Montana's largest native salmonid, reaching over 20 pounds here. Bull trout are a beautiful fish found only in the state's cleanest and coldest rivers and streams. Because it needs pristine water, the species was harmed during the 20th century by mining waste and streamside vegetation loss that resulted in warmer water. In addition, bull trout are generally unwary and aggressive predators that can easily be caught by sport anglers, which added to their demise.

Bull trout were listed as a federally threatened species in Montana in 1998. Since then, FWP and other state and federal agencies have worked with landowners to help bull trout recover. Among the most significant achievements so far:

1. We've identified 115 bull trout core areas and connecting spawning habitat within 12 major restoration areas, set a goal to restore bull trout numbers to levels that can sustain regulated sport harvest across the species' range, and have outlined and begun the work needed to meet that goal.

2. Since 2001, FWP and USFWS biologists, in cooperation with Avista Corporation and PPL Montana, have been trucking bull trout upstream around three hydroelectric dams on the lower Clark Fork River to reach spawning tributaries. Eventually, we hope, the dams will be modified to allow fish to move upstream on their own. Until then, recent advancements in DNA technology are allowing us to return spawning bull trout to the rivers where they were born, which maintains the genetic health of their offspring.

3. We're working with Idaho agencies, Trout Unlimited, and others to help anglers identify bull trout so they don't accidentally keep these fish when fishing for other species.

4. On the Blackfoot River, we have been working for more than a decade with landowners to screen water diversions that had been luring bull trout to their death. In addition, changes in cattle grazing regimes, stream narrowing, bank vegetation restoration, and other improvements on the Blackfoot's spawning tributaries have led to colder, cleaner water that bull trout need to survive.

5. Starting in 2004, we opened Hungry Horse Reservoir and Lake Koocanusa to limited bull trout harvest, and the South Fork of the Flathead River to catch-and-release fishing. That's a positive sign, because it means those bull trout populations are strong enough to sustain some angling pressure. Last year, FWP issued more than 2,500 "catch cards," required by anglers to fish for bull trout in those waters, and we expect to issue even more in 2005.

6. As early as next year, the Milltown Dam could be removed, opening up hundreds of miles of the Blackfoot and Clark Fork rivers and spawning tributaries to bull trout, which have been blocked from those waters since the dam was built in 1908.

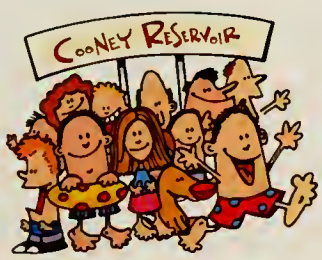
Certainly there are still many problems remaining that hamper full bull trout recovery. Among them are mining pollution, habitat loss, streambed siltation, competition with lake trout, hybridization with brook trout, and poaching. Despite these obsracles, however, Montanans seem determined to restore the bull trout across its former range. That's why FWP is doing all it can to make this bright spot on the endangered species landscape even brighter.

—M. Jeff Hagener, *Director, Montana Fish, Wildlife & Parks*

NATURAL WONDERS

Q. *I was at Lewis and Clark Caverns last summer, and it was packed. Is that Montana's most popular state park?*

A. Nope. With roughly 200,000 visitors each year, the most popular state park is Cooney Reservoir, 30 miles southwest of Billings.



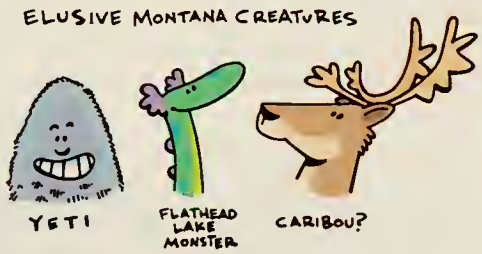
The park is popular for fishing, swimming, boating, camping, and picnicking.

Q. *Is there an easy way to tell a western bluebird from a mountain bluebird?*

A. Yes, at least for the males. The male mountain bluebird is entirely sky blue, while the male western bluebird is mostly blue but with a chestnut-red breast and shoulders. The females of both species look similar, though the western has some light chestnut coloring in the breast.

Q. *My wife says Montana has caribou. I bet her $20 she's wrong. Who's right?*

A. The jury is still out on the status of mountain caribou in Montana. Until the late 1950s, scattered bands lived in the far northwestern corner of the state, in mature cedar, hemlock, whitebark pine, and fir forests. These were likely southern extensions of larger herds in Canada. Much of the old-growth habitat that mountain caribou need has been logged off or altered by forest fire. The last confirmed Montana sighting was in 1958 in the Yaak area of the Kootenai National Forest. Since then, there have been several unconfirmed sightings.



ILLUSTRATIONS BY PETER GROSSHAUSER

2005 legislation benefits Montana wildlife and fisheries

When the 2005 Montana legislative session adjourned in late April, several important bills benefiting wildlife, fish, hunters, and anglers had been signed into law. "I think people would say it was a good session for Montana's wildlife and fisheries," says Jeff Hagener, FWP director. "There was some additional legislation we would have liked to have seen passed. But overall, things went real well for hunters, anglers, and others interested in fish and wildlife."

GEORGE LANE, *HELENA INDEPENDENT RECORD*

Governor Brian Schweitzer signs a bill reauthorizing the Montana Habitat Acquisition Program. Also seated are bill sponsors Senator Joseph Tropila (left) and Representative George Golie (right). Standing (from left to right): Montana Audubon executive director Janet Ellis, Montana Wildlife Federation executive director Craig Sharpe, Habitat Montana citizen advocates Stan Meyer and Paul Sihler, and FWP director Jeff

The two most closely watched wildlife bills proposed to make the Block Management and Habitat Montana programs permanent. Popular with hunters and landowners, Block Management opens up roughly 9 million acres of additional hunting access across Montana each year. Habitat Montana, officially known as the Montana Habitat Acquisition Program, has protected 250,000 acres of prime wildlife habitat statewide over the past ten years. Both programs are funded with hunter license dollars. Authorizing legislation for both programs had been scheduled to end in early 2006.

In addition to reauthorizing the two programs, the 2005 legislature retained the Private Land/Public Wildlife Council that reviews Block Management, and it gave FWP authorization to continue funding the program, which costs nearly $4 million each year.

Craig Sharpe, executive director of the Montana Wildlife Federation, says his organization's 23 member groups strongly supported the reauthorization of Block Management and Habitat Montana.

"The testimony in favor of these programs at the capitol this year was overwhelming," Sharpe says. "Legislators knew that Montanans were solidly behind reauthorization."

Also passed was legislation authorizing an increase in resident hunting and fishing license fees. The last time resident fees went up was in 1994. FWP had proposed an increase to make up for a steady etosion in the agency's buying power due to inflation, as well as increased responsibilities such as managing wolves and whirling disease. The new resident fees, which go into effect on March 1, 2006, include discounts for youth, seniors, and disabled citizens.

Among other important laws passed by the 2005 legislature:

- Lawmakers made permanent the Fishing Access Enhancement Program, which provides incentives to landowners who grant anglers access across private land to public fishing streams.
- As recommended by the Private Land/Public Wildlife Council, the FWP Commission may now issue, through a raffle, limited licenses for moose, elk, sheep, goat, and deer, with proceeds dedicated to enhancing hunter access.
- The state and all counties must now provide "substantially the same" public stream access that existed previously whenever a bridge or highway right-of-way is replaced.
- FWP may continue to lease water from landowners to maintain adequate flow in streams and rivers for fish survival.
- FWP may only use the Smith River Corridor Enhancement Account for purchasing land or conservation easements, funding water leases and fisheries, and conducting rehabilitation or enhancement projects.
- Starting March 1, 2006, nonresident youth age 12 to 17 may purchase a big game combination license for half price.

Resident License Fee Changes (to take effect on March 1, 2006)

	CURRENT	NEW
Conservation license	$6.25	$8
Fishing	$13	$18
Bird	$6	$7.50
Sportsman's (with bear)	$66.25	$85
Elk	$16	$20
Deer A	$13	$16

MONTANA FWP

Zebra mussels arrive

"Whew!" was the collective response of anglers and biologists after a potential biological calamity was recently averted.

The threat came from zebra mussels, which were attached to a used boat purchased by Ed Roe, an avid walleye angler from Amsterdam who acquired the 18-foot craft in Michigan. A board member of his local Walleye Unlimited chapter, Roe had heard about zebra mussels spreading into Great Lakes states' waters and the threat they pose to lake and river ecosystems. While examining the boat, he noticed fingernail-sized shells in the livewell intake. The dealer casually explained the shells were from zebra mussels, common to the nearby St. Joe River.

The price was good, Roe says, so he bought the boat and trailered it home. But he knew that zebra mussels would not be welcome in Montana, where the invasive crustaceans have yet to show up. So he called his friend Bruce Rich, Montana FWP

regional fisheries manager in Bozeman. The biologist verified that indeed zebra mussels were on the boat and notified Eileen Ryce, FWP Aquatic Nuisance Species Program coordinator.

It was the phone call Ryce had been dreading. Zebra mussels, which originated in Europe, arrived in the United States by way of ocean-going ships entering the Great Lakes. The tiny mollusks attach themselves to docks, rocks, and boat hulls. They clog industrial intake pipes and decimate native mussels. After zebra mussels die, their razor-sharp shells wash up onto beaches.

"We consider them a huge biological threat to Montana's lakes and rivers," Ryce says.

Ryce examined the boat and advised Roe to scrape the mussels off the hull and flush bleach through the livewell and water pipes, where the sesame seed–sized zebra mussel larvae can live.

"I saw the boat a few weeks ago at a Walleye Unlimited meeting, and Ed had really cleaned it up well," says Ryce. "He used a home pressure washer and took the boat to a car wash and hosed it down there, too."

Rich views the incident as a warning of how easy it is to inadvertently carry zebra mussels into Montana from other states. Montana boat owners who visit other states and out-of-staters who bring their boats here need to be vigilant about carrying zebra mussels and other aquatic nuisance species.

"This was a real wake-up call," he says.

To learn more about the threat of zebra mussels and other aquatic nuisance species, go to http://fwp.state.mt.us/mtoutdoors/HTML/Articles/2003/ANS.htm

MONTANA FWP

Eileen Ryce, FWP's aquatic nuisance species specialist, with Ed Roe and his walleye boat. The small zebra mussels (inset) were discovered before spreading to Montana waters.

Moosers gather

More than 100 wildlife biologists from as far away as Alaska and Nova Scotia came to Whitefish in late May for the 41st North American Moose Conference and Workshop. Hosted by FWP and the Montana Chapter of The Wildlife Society, the conference included presentations, discussions, and field trips.

"This was an incredible opportunity for Montana biologists to exchange knowledge, research, and management ideas with some of the world's leading moose scientists and managers," says Jim Williams, FWP regional wildlife manager in Kalispell.

TOM DICKSON

A herd of biologists ambles through prime moose habitat in the Flathead National Forest

Among the highlights:

• Victor Van Ballenberghe gave the keynote presentation on politics, predator control, and wildlife conservation in Alaska. The retired Alaska moose biologist explained that recent attempts to boost Alaska's population and sport harvest of moose and other ungulates by killing wolves and bears would likely fail because it did not factor in habitat conditions and land carrying capacity.

"The Alaska Board of Game's recent approval of programs to reduce predator numbers to increase ungulate numbers was a step backwards," said the biologist. Van Ballenberghe was the lead signatory of a recent letter from 124 scientists and wildlife professionals from across the United States calling for Alaska to return to wildlife management based on sound science.

• Biologists toured moose habitat along the North Fork of the Flathead River. Participants visited the sites of the Red Bench (1988), Moose (2001), Roberts (2003), and Wedge (2003) forest fires. The blazes consumed more than 200,000 acres in Glacier National Park and Flathead National Forest. New growth from the fires is producing prime moose habitat in the area, one of Montana's top moose producers.

• Presentation topics included moose hunting and wolves in Sweden, First Nations moose hunting in Canada, managing moose at Montana's Mount Haggin Wildlife Management Area, electric fences to reduce collisions between moose and vehicles, and the effects of winter ticks on moose mortality.

Do the State Park TWIST

Fun things you never expected to do in Montana's state parks

Catch a Record Laker

Flathead Lake State Park is widely known for boating, beaches, family camping, and remote islands. But the multi-unit park also sits on one of the West's great lake trout waters. Last year, a 77-year-old woman broke Montana's state lake trout record with a 42-pound, 11.8-ounce fish. Other game fish species in Flathead are northern pike, perch, mountain whitefish, and cutthroat trout. For Flathead Lake fishing updates, see FWP's on-line report at: fwp.mt.gov/fishing/guide/.

MONTANA FWP

Barbed-Wire Bears

By Tom Dickson

Using old-fashioned fencing wire and state-of-the-art DNA technology, this unprecedented new survey of northern Montana grizzlies could help determine whether the population is on the rebound

TOM DICKSON

I've smelled vile odors before, but the year-old fermented mix of cow blood and fish guts that Lynette Noble pours from a water bottle is enough to send me running for the bushes.

Noble, though, has grown used to the stench. A technician for the largest grizzly bear population survey ever conducted, the University of Montana graduate resecures the lid, slides it into a plastic bag, and places the package into a backpack. She has been handling these bottles of bear "lure" throughout the summer of 2004.

"It's still bad, but not like the first time I smelled it," she says, wrinkling her nose.

Though repulsive to humans, the bloody cocktail apparently is irresistible to bears. Which is why it is being poured on piles of rotting logs at 2,560 sites throughout an 8-million-acre area bordered by Canada, the Rocky Mountain Front, Flathead Lake, and the Blackfoot Rivet Valley. The idea is to lure grizzly bears to the sites, which are surrounded by a single strand of barbed wire. Using DNA analysis, scientists will later identify bear hair snagged on these wires and on bear "rub" trees and posts. The information will provide biologists with the first reliable estimate of the Northern Continental Divide Ecosystem (NCDE) grizzly population, considered the largest in the lower 48 states. Results of the survey could also add fodder to debate over one of the country's most charismatic and controversial wildlife species.

MAJOR RAMIFICATIONS

"The main question we're trying to answer is how many grizzly bears are now in the NCDE," says Kate Kendall, who coordinates the Northern Divide Grizzly Bear Project. A U.S. Geological Service research biologist stationed at Glacier National Park, Kendall explains that wildlife managers can't effectively protect, control, restore, or otherwise manage grizzly bears or other wildlife populations unless they first know how many animals exist and whether the population is increasing or decreasing.

"Right now, the population is managed on a rough estimate," she says.

That will change in late 2006, when the results of the 2004 bear survey will be published. Though the project will generate reams of useful data, most eyes will be on one number: the NCDE grizzly bear population estimate.

The population size will be a major factor in how the U.S. Fish and Wildlife Service (USFWS) determines the progress of NCDE grizzly bear recovery. The most immediate ramification of the new population estimate may be a change in the number of grizzlies that can be safely removed from the NCDE population, says Chris Smith, chief of staff for Montana Fish, Wildlife & Parks.

"One of the big challenges right now is knowing if the NCDE grizzly population can sustain current levels of human-caused mortality—like from collisions with trains

and cars, depredation management removals, things like that," says Smith.

Based on sightings of females with cubs, the USFWS currently estimates the NCDE grizzly population at 400 to 700 grizzlies.

"Based on that range, recent mortality has exceeded the rate specified in the federal Grizzly Bear Recovery Plan," Smith says.

In other words, it may be that more grizzlies are now dying than being produced, resulting in a declining, unsustainable population. Which would mean Montana should be taking additional precautions to reduce mortality.

However, FWP grizzly experts strongly believe the NCDE population is above the USFWS estimate. Over the past decade, they've watched as growing numbers of grizzlies have spilled east from the Rocky Mountain Front into Choteau and other lowland communities. The bears are also now moving more frequently south to the Blackfoot Basin and west to the Salish Mountains between U.S. Highway 93 and Lake Koocanusa.

If the state bear specialists are correct and the DNA study shows the population is higher than now thought, then current grizzly mortality might not be harming the NCDE population.

"That would give us more management flexibility," says Smith. "For instance, maybe we could transplant some NCDE grizzlies to the Cabinet-Yaak Ecosystem, which is seriously short of bears."

If the DNA count shows a high population, that could also mean the recovery goal has been reached—another step in the long and laborious process for delisting grizzlies in the NCDE. Smith cautions that even with such a step, delisting would be years off.

"Some people either fear or hope that this [population estimate] will lead to immediate delisting, but that won't be the case," he says. "There would also have to be additional monitoring to show that this grizzly population is either stable or increasing and that there's enough secure habitat. The number we get from the 2004 population survey is crucial, but it's by no means the only factor that will go into decisions about the grizzly."

THE PROJECT

An accurate number of NCDE grizzlies has eluded biologists for decades. Comprising Glacier National Park and the Bob Marshall, Scapegoat, Great Bear, and Mission Mountains wildernesses, the ecosystem is one of the wildest and most inaccessible in the contiguous United States. Moreover, grizzly bears are among the most difficult animals to count. For decades, biologists thought a reliable population estimate of these secretive bears in the NCDE would be impossible to obtain.

Then came DNA hair follicle sampling. By snagging the hair of bears visiting lure stations or using rub trees, researchers can now identify individual animals and accurately estimate population size with the same DNA technology police use to solve crimes.

"In addition to being quick and relatively inexpensive, one major advantage of DNA analysis is that we don't have to trap, tranquilize, collar, and otherwise handle bears," says Kendall. "In fact, there's really no interaction between bears and people."

Such technological advances notwithstanding, surveying bears in the 8 million

PHOTOS BY TOM DICKSON

A BLOODY OPERATION Surveying grizzlies in the 8-million-acre Northern Continental Divide Ecosystem (above) required a mix of new technology and old hardware. Counterclockwise from above left: Technician Lynette Noble pours a bottle of lure on a scent pile; Noble and technician Kyle Baier carefully remove snagged bear hairs; placing hairs in bar-coded envelopes, later sent to headquarters for recording and DNA analysis; using lighters to sterilize each barb before leaving the site.

"I have to admit that some people told me I was sending these techs out on a suicide mission, putting them into the heart of grizzly bear country loaded with bottles of bear attractant."

—Kate Kendall, *Project Leader, Northern Divide Grizzly Bear Project*

acres comprising the NCDE was a monumental task. It began in 2003, when wildlife biologists and local bear managers helped Kendall and her staff identify sites to set up scent stations as the first phase of the Northern Divide Grizzly Bear Project. Meanwhile, crews covered 4,200 miles of trails, powerline corridors, fence lines, and forest roads to identify 4,750 trees and posts where bears like to rub their bodies.

The following year, more than 200 temporary employees began building, checking, and dismantling the scent stations. Added to the workforce were 200 part-time volunteers, who helped at scent stations, fermented and bottled the lure, and packed materials into the backcountry.

THE DIRTY WORK

Most of the workers were technicians such as Noble and her work partner Kyle Baier. On the day when I accompany the pair, they are checking a station in cell number 101P3 about 25 miles east of Missoula on land owned by Plum Creek Timber Company. After driving to the remote site, we hike in several hundred yards from the logging road, letting our noses lead us to the lure station, which the technicians set up two weeks earlier. Noble and Baier check each barb of the wire surrounding the odoriferous woodpile. The wire, exactly 50 centimeters from the ground, snags hair whether bears go over or under it. Being careful to retain the follicles, which hold the tissue containing DNA, the technicians use tweezers to place each hair into an envelope. They then use lighters to sterilize each barb on the wire.

"That removes any DNA and ensures we don't count the same bears the next time we use the wire at a different site," says Baier, a University of Montana geology undergrad.

Kendall says 11 quality-control experts maintained the study's strict protocols by inspecting lure stations and making sure the technicians used proper technique.

"For a project this big, it's essential to maintain a high level of consistency throughout," she says.

Maintaining security is also essential. The Northern Divide Grizzly Bear Project will cost $4 million, most of it from federal appropriations championed by Senator Conrad Burns.

"A lot of public money went into this project, so we took security very seriously," Kendall says.

For example, all hair samples were kept in a vault. Also, envelopes containing hair samples were bar coded, so they could be scanned to avoid typographical errors. Computer data was backed up daily, and backups were stored off-site.

Once they have dismantled the first scent station, Noble and Baier drive farther into the forest to put up another. After pounding four metal fence posts into the rocky ground, they gather armloads of dead wood and build a mound 3 feet high, onto which they pour several liters of lure. Then they hoist a rag soaked in lure above the pile to catch the wind and the notice of bears.

Some of the project's technicians did their surveys by truck, while others used four-wheelers. Most of the surveys, however, were conducted in backcountry wilderness, requiring crews to pack in everything necessary to set up lure stations. On each site visit, pairs of technicians backpacked in three 1-liter bottles of lure, two rolls of barbed wire, a radio, a GPS unit, and fencing pliers, plus food, a tent, and other personal gear. Some of the men and women carried packs weighing 85 pounds.

Though the crews saw a lot of wilderness, they didn't see many bears. Kendall says the 200 techs had just 95 confirmed grizzly bear sightings for the entire summer.

"Generally, bears don't want to be seen and stay away from people, so that number didn't surprise us," she says.

More remarkable than the relatively few bear sightings, Kendall says, was the lack of work-related injuries: a few sprained ankles and banged thumbs, and one torn knee ligament. Also, there was not a single bear-related injury or even a serious charge or other encounter—much to Kendall's relief.

"I have to admit that some people told me I was sending these techs out on a suicide mission, putting them into the heart of grizzly country loaded with bottles of bear attractant," she says. "But we knew all staff were well trained in bear avoidance and that we'd taken the necessary precautions."

Kendall's confidence came from coordinating a similar study on 2 million acres in and around Glacier National Park from 1998 to 2000. There, she pioneered the tree rub survey technique and learned to train and orchestrate large field crews.

Tom Dickson is editor of Montana Outdoors.

FWP Radio Telemetry Study

It's essential to find out how many grizzlies live in the NCDE. But more important is knowing whether that population is decreasing, increasing, or stable.

Rick Mace, Montana FWP's senior bear research scientist, is heading a project that monitors the NCDE grizzly bear population. The survey, also supported by other state and federal agencies, Indian tribes, and the University of Montana, will show whether the grizzly population is moving up or down from the base number derived from the DNA hair study. Those results could indicate whether the population has recovered and could be moved toward delisting.

In 2004, Mace and other biologists captured, tranquilized, and fitted radio collars onto 25 female grizzlies. Over the next several years, they will monitor the bears from aircraft to learn whether the animals die and how many cubs they produce. Satellites will pick up GPS signals from the collars of bears the biologists can't locate from aircraft.

CURIOUS COWS

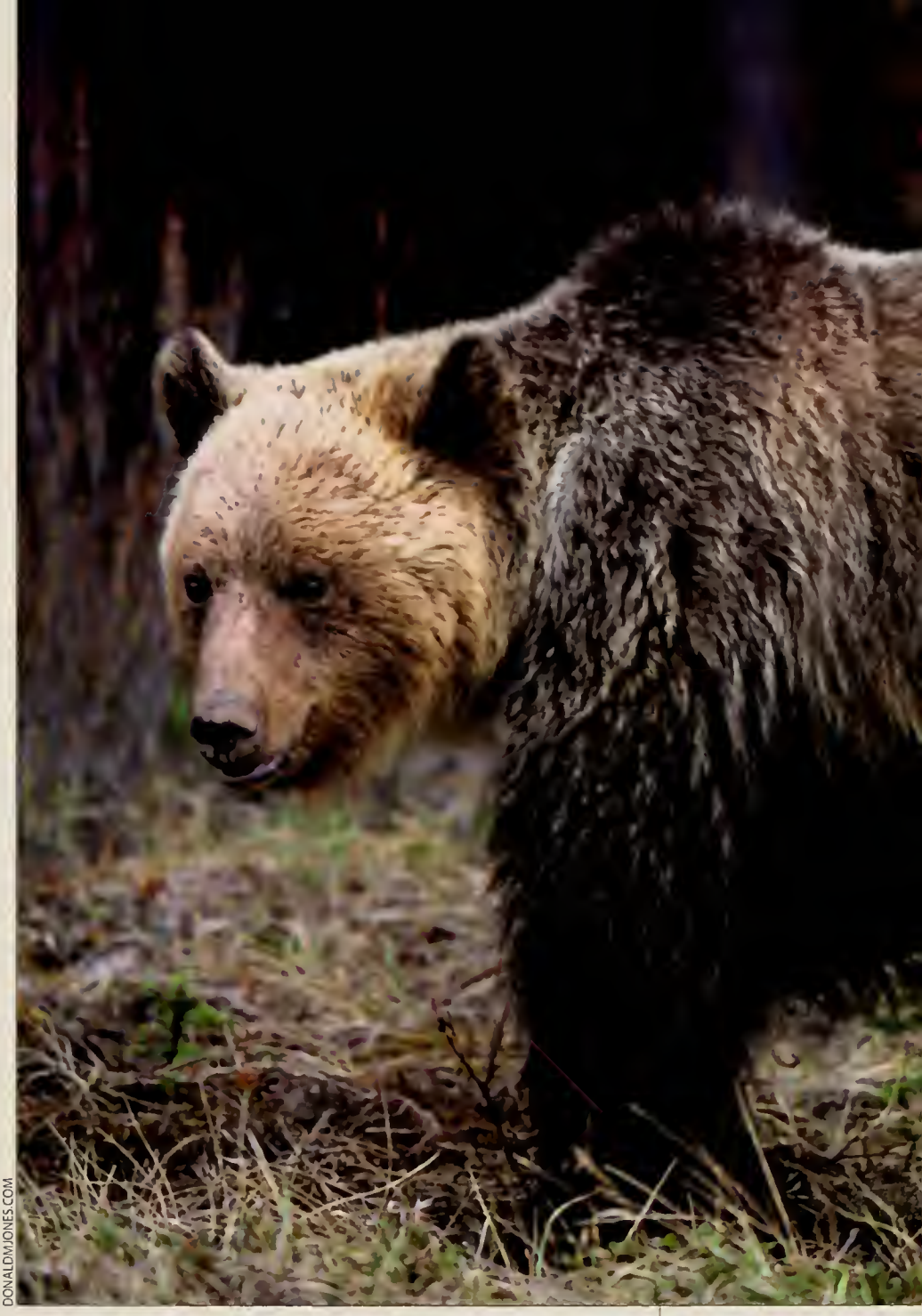
When the survey ended in August 2004, the team had accomplished an extraordinary amount of work: 300,000 miles driven, 66 miles of wire used (all of which was retrieved and either donated to landowners or recycled), 12,000 miles of backcountry hiked to monitor rub trees, 190,000 envelopes prepared, and half a million envelope labels applied by hand.

"As far as we know," Kendall says, "this was the largest bear monitoring project ever conducted."

Currently, technicians at a private genetics testing laboratory in British Columbia are analyzing the DNA in the hair samples. Kendall expects that work to be done next spring, and she plans to issue a final report in the fall of 2006.

Back in the field, I help the two technicians build an enclosure fence around another scent station to keep out cattle, which for some reason are attracted to the sites. "Cows come in and tear up the srations," says Noble. "Just the other day we had one break through the barbed wire and knock everything over. I think they're just curious."

Cows aren't the only ones. Montanans and others interested in the future of the grizzly bear eagerly await Kendall's report and the results of a parallel FWP study (see sidebar, below). What everyone wants to know is how many grizzly bears live in the Northern Continental Divide Ecosystem, whether those numbers are going up or down, and most important, how that trend will alter future grizzly management decisions.



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"We know that females will have cubs during this project and that some females will die," Mace says. "To come up with a population trend, we compare the mortality rate of females to their reproductive rate. A growing population has a higher birth rate than death rate. For a declining population, it's the other way around."

MONTANA FWP

E-NECKLACE A tranquilized grizzly sow awaits her radio collar. Over the next several years, FWP biologists will monitor the survival and reproduction of 25 grizzlies.

GOING UP OR DOWN? Much rides on the results of the 2004 population estimate and an ongoing population trend study of the Northern Continental Divide Ecosystem grizzly population. If the population is falling, Montana will need to take additional steps to reduce human-caused mortality, such as from trains and other vehicles. If grizzly numbers are rising, however, that could mean they are doing well enough to begin down the long and politically potholed road to federal delisting.

CHUCK HANEY

The True Utmost Reaches *of the* Missouri

Were Lewis and Clark wrong when they identified the source of this great river?

BY DONALD F. NELL AND ANTHONY DEMETRIADES

SUNNY TSE

On Monday, August 12, 1805, the Corps of Discovery was ascending the Beaverhead Mountains just east of Lemhi Pass, toward the source of a small stream known today as Trail Creek.

Soon the stream had faded to an indifferent brook that a person could easily straddle. And here Hugh McNeal did just that. The expedition member was undoubtedly thinking of the many months of hard poling and rowing behind him when, as Captain Meriwether Lewis later wrote, he "thanked his god that he had lived to bestride the mighty & heretofore deemed endless Missouri."

This long-awaited and momentous discovery answered two important questions on the minds of Americans at the time: Was there a practical navigable route across the mountainous country of North America via the Missouri River? And where exactly were the headwaters of that mighty river?

Lewis later wrote there was no navigable link between the Pacific and Atlantic oceans. He was right on that account. But he was wrong about his other conclusion, that the stream he, McNeal, and their companions looked down upon that August day of 1805 was the source of the river they had traveled up since their voyage began 15 months earlier in St. Louis. Two miles up the mountain from where McNeal straddled the stream, Lewis hiked to where the creek seeped from the rocks and wrote in his journal that they had reached "the most distant fountain of the waters of the mighty Missouri in surch of which we have spent so many toilsome days and wristless nights." Young Lewis, so accurate in his many other geographic and cartographic endeavors on the voyage, had missed the true origin of the Missouri by more than 100 miles.

NOT "THE MOST DISTANT FOUNTAIN" Captain Lewis and crewman McNeal mistakenly identified this spring on today's Trail Creek, known as Lewis Spring, as the Missouri's source. The river's true origins, in the Red Rock River Valley (opposite page), would not be identified for another 90 years.

On this, the bicentennial of the Corps of Discovery's journey through Montana, it is necessary to finally make clear where in fact the great Missouri emanates from the earth. Not just to answer questions posed by tourists and schoolchildren. Not just to reopen the door to debate over what might have become of the expedition had it followed other water routes in its search for a way west. But more important, to set the record straight—as it has been set for the Nile, the Mississippi, the Congo, and the world's other great rivers. Thus, the true origin of the Missouri:

Not Three Forks

In some ways, there is no question as to where the Missouri begins. In his journal entry of July 28, 1805, Lewis solved the problem at the Three Forks with a stroke of his pen: "Both Capt. C. and myself corresponded in opinon with rispect to the impropriety of calling either of these [three] streams the Missouri and accordingly agreed to name them after the President of the United States and the Secretaries of the Treasury and state...." In other words, the Missouri begins where its three confluents end, at today's Missouri Headwaters State Park, near the town of Three Forks. Any map from a bookstore, library, or service station confirms that the river Missouri "starts" at Three Forks. What has been forgotten, however, is that this stated origin of the mighty river is an artifice bequeathed upon the nation courtesy of Lewis and Clark, thereafter upheld by the U.S. Geological Survey, the U.S. Board on Geographic Names, and many other fed-

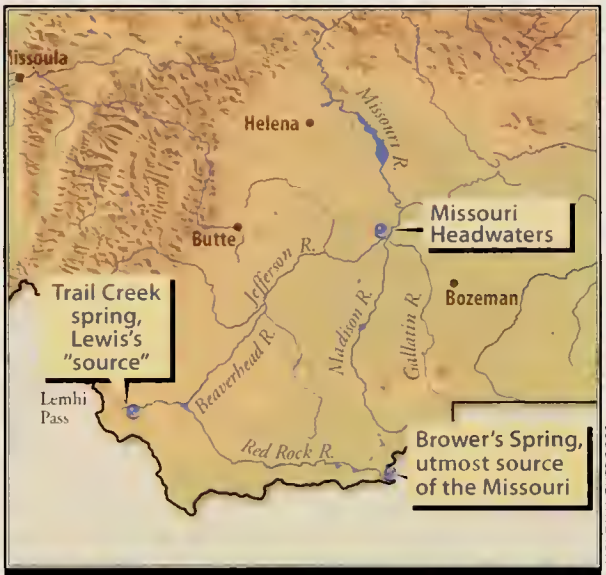
eral and state agencies.

However, the captains' saying the Missouri begins at Three Forks does not make it so. The true source of a river is the tributary spring bubbling up from the ground in a location that is the farthest, along water miles, from where that river ends. One way to think of this is to ask: At what point of the Missouri River system could a person dispense a drop of water, so that the drop will travel the longest distance to reach the Atlantic Ocean?

That point is the Missouri River's true origin.

Viewed in this light, Three Forks is obviously not the Missouri's starting place. Look at a Montana highway map, and the most likely route to the site is up the Jefferson River, to the Beaverhead south past Dillon, to the Red Rock River, and then east toward a little-known chasm on Mount Jefferson near the Continental Divide in Montana's remote Centennial Valley.

Yet for some reason over the past two centuries, explorers, surveyors, chance travelers, and historians have rarely mentioned the Centennial Valley as a possible cradle of the Missouri. It is remarkable that, as the years passed, Lewis's original misnomer survived scrutiny in the face of modern cartographic evidence to the contrary.



MONTANA OUTDOORS

MANY ORIGINS From Missouri Headwaters, Lewis and Clark headed up the Jefferson then the Beaverhead before going west into today's Idaho. Had they continued to the Red Rock River, they would have found the Missouri's true source in the Centennial Valley (see map, page 13).

Brower's Spring

Not everyone missed the captain's mistake. In the mid-1890s, Civil War veteran, surveyor, and historian Jacob V. Brower set out to locate the Missouri's true source. In 1888, Brower had verified the true source of the Mississippi River and urged the state of Minnesota to protect the site as Itasca State Park. Accompanied by several local ranchers, Brower scaled the Centennial Mountain range on its south side, determined to reach the source of the principal stream of the basin now called the Red Rock River. Ascending slopes choked by rock slides and avalanches, dodging precipices and snowbanks, he and his companions finally discovered a mossy hillside from which first oozed the stream, the progenitor of the Jefferson River and the distant Missouri. Brower left a copper plate with his name and date as testament to his visit. He also took a few photographs and named many of the area's geographical features on his hand-drawn maps after his companions who accompanied him on the hike.

A prolific author, Brower wrote about his discovery in *The Missouri: Its Utmost Source*, published in 1896. However, subsequent references to the publication were rare, despite Brower's national reputation as an explorer. Though some hikers and hunters surely passed by Brower's Spring over the next century, there was no official commemoration of the site as the Missouri's true source.

That changed, however, in the summer of 1995, after members of the Lewis and Clark Trail Heritage Foundation (LCTHF) discovered Brower's book and eagerly read the details it provided. Two trips ensued that summer. The first was led by an officer of the heritage foundation, John Montague, who commemorated the hike by leaving his name and those of his companions inside a glass jar buried under a mound of rocks. The other expedition was organized by Donald Nell (the senior author of this article), who led 15 members of the newly formed LCTHF Headwaters Chapter in Bozeman to the Centennial Mountains and Brower's Spring on July 10.

Brower's Spring, Revisited

The spring emanates from inhospitable, volcanic terrain at nearly 9,000 feet above sea level in the Centennial Mountains. The Continental Divide traverses the area, on the Montana–Idaho boundary. The only Montana range aligned east-west rather than the usual north-south direction, the Centennials are known as incubators of severe storms. In summer, the mountain skies can darken in minutes, sending rain, hail, and even snow down on intrepid explorers.

The LCTHF members drove on a mountain road to a position where they could park their vehicles as closely as possible to the spring. With the aid of Brower's and modern maps, they reached the spring after a few miles' hike. Here they found Montague's rock pile. Inside was the glass jar, to which they added their names. They then rebuilt the mound around the jar for future visitors to find.

Unfortunately, the group was forced to postpone its search for Brower's copper plate, because one member broke an ankle on the rocky terrain and a rescue helicopter had to be summoned.

Despite the injury, the trip had been a supreme achievement for the modern explorers. Like Hugh McNeal nearly two centuries before, they too had straddled a little creek. But unlike the Corps of Discovery crewman, the LCTHF members were most certainly at the Missouri River's true source.

The late Donald F. Nell was a past president of the Lewis and Clark Trail Heritage Foundation and coauthor of Lewis and Clark in the Three River Valley. *Anthony Demetriades, professor emeritus of mechanical engineering at Montana State University and founder of the Gallatin Lewis and Clark Bicentennial Association, spends summers with his wife, Donna, at their ranch on Hellroaring Creek, 3 miles from Brower's Spring.*

HYDROGRAPHIC AND TOPOGRAPHIC CHART
OF THE
UTMOST SOURCE OF THE MISSOURI RIVER
Mountainous Range dividing the Centennial Valley from the West Fork of Madison River
Sand Hills
Buffalo trails and wallows abound
Sage Brush Plain
Hot Springs
Stock Range
Hackett Mountain
Elk Mountain 9,000
Peak 10,000
Prehistoric Village Site
Picnic Mt.
CENTENNIAL VALLEY
The Centennial Valley is a flat plain two feet above the Sea, about six miles wide from south to north and nearly fifty miles in length from east to west the Alaska Basin, inclusive
This Valley formerly constituted a glacial lake bed until drained by erosion, at the most northwestern extremity.
LOWER RED ROCK LAKE
UPPER RED ROCK LAKE
THE ALASKA BASIN
Monida Pass
Pass Peak
Marble Mt.
Coral Mt.
Hanson Mt.
Upham Pk 9,500
Burnside Mt 9,000
Brower Peak 11,500
Crater Peak 11,500
Crater Walls
Magdalen P.O.
Stage Road Monida to Lake Henry
Humphrey Mountain
Sheep Mountain
Warm Springs Creek
Preacher Peaks
MAIN RANGE OF THE ROCKY MOUNTAINS
Low Divide
STATE BOUNDARY LINE
Blair Mountain 10,000
M O N T A N A
I D A H O

THE MISSOURI: ITS UTMOST SOURCE, BY JACOB V. BROWER

The Longest River

How was the LCTHF certain that, of the three rivers that met in Three Forks, the Jefferson was the longest and thus led to the Missouri's source? The following river lengths come from the Montana Natural Resource Information System and the Montana Department of Natural Resources and Conservation, which maintain the most recent and accurate records of in-stream distance measurements by professional surveyors.

The Gallatin River first rises in Gallatin Lake in Yellowstone National Park, southwest of Mammoth Hot Springs and south of the park's Mount Holmes. The west longitude is 110 degrees and 53 minutes, and the north latitude is 44 degrees, 51 minutes. Altitude is roughly 9,000 feet. From there the river flows through the park down Gallatin Canyon to Bozeman and then Three Forks. Total length from Gallatin Lake to its confluence with the Missouri is 115.4 miles.

The Madison originates in 8,500-foot-high Madison Lake, also in Yellowstone National Park. Maps show the lake's location at 110 degrees and 52 minutes west longitude, and 44 degrees, 21 minutes north latitude, about 7 miles south of Old Faithful. The stream discharging from the lake is first called the Firehole River, until it joins the Gibbon River about 20 miles to the north and becomes the Madison. The entire length of the Madison is 177.3 miles from Madison Lake to the Missouri at Three Forks.

The Jefferson takes an even more varied course. The stream issuing from Brower's Spring is located at 111 degrees, 29 minutes west longitude, and 44 degrees, 33 minutes north latitude, at an elevation of approximately 8,800 feet. From this point on, the first stretch of the Jefferson is known as Hellroaring Creek, for the thundering noise of its riffles and waterfalls. Soon thereafter, it flows into the flat of the valley, where it becomes the Red Rock River and flows west then northwest to Clark Canyon Reservoir. Below the dam, the river becomes the Beaverhead until it joins the Big Hole River just north of Twin Bridges, beyond which it is known as the Jefferson. The total distance from Brower's Spring to the junction of the Jefferson with the Madison at Three Forks is 298.3 miles. This confirms that the Jefferson drainage is the longest of the three and that Brower's Spring is the Missouri's true origin.

Which brings us, finally, back to the idea of following a single drop of water. Were we to follow one that dropped from the sky into Brower's Spring, it would flow along the 298 miles from the spring to Three Forks. Then it would continue another 2,341 miles to St. Louis, where the Missouri meets the Mississippi. From there our drop would travel 1,003 miles to New Orleans, after which it would travel an additional 103 miles before finally depositing itself into the Gulf of Mexico. The total distance is 3,745 miles, making this great American river system the world's third longest, after the Nile and the Amazon.

And to think: Lewis and Clark almost discovered its source.

THE UTMOST SOURCE Jacob Brower's original map (above), published in 1927, shows the route to the Missouri's source (see our added indicator arrow). Nearly one century later, John LaRandeau (shown below at the spring) and other members of the Lewis and Clark Trail Heritage Foundation retraced Brower's steps. Left: Notes from a recent trip.

JOHN LARANDEAU

LIZ LEWIS

RIGHT ON TARGET

Hunters, peace officers, and recreational marksmen are zeroing in on Montana's growing number of shooting ranges

By Bruce Auchly

Dave Watts can hardly contain his enthusiasm.

"I've been looking for a 1,000-yard shooting range for a long time," says Watts, a retired wildlife biologist from Ohio who moved to Montana several years ago.

As he talks, Watts becomes increasingly animated, thumbing through a stack of gun magazines stacked neatly on his kitchen counter.

"My goal is to take into account all of the ballistics information, like caliber and powder and bullet weight," he says, "then know what the humidity is, the wind, the elevation. That's the challenge of factoring in everything. Challenge and satisfaction are almost the same word."

So passionate is Watts about testing his long-distance shooting skills that in 2004 he plunked down $1,000 to become a life member of the yet-to-be-built Great Falls Shooting Sports Complex, based only on the promise it would eventually contain a 1,000-yard range.

Such is the zeal of shooters.

While the days of sighting in a hunting rifle behind the barn or plinking at tin cans off the back porch have not disappeared, they are receding like the rural life those activities embody. In 1999, to help fill the need for shooting sites, the Montana legislature put into law an existing program administered by Montana Fish, Wildlife & Parks. The program provides grants to shooting clubs, sports groups, and other organizations to develop and improve public shooting ranges.

Montana has 140 shooting ranges in 47 of the state's 56 counties. Those ranges include public and private facilities, covering the spectrum of the shooting sports: rifle, shotgun, pistol, and archery.

According to Kurt Cunningham, who administers the program for FWP, shooting ranges do more than provide people with places to discharge firearms.

"Target shooting is a huge sport in the United States and worldwide," he says. "Ranges are also used by hunters practicing their marksmanship, law enforcement per-

sonnel, and even by Boy Scouts earning merit badges. They are also important recreational sites for small communities."

Local shot spot

Take, for example, White Sulphur Springs, population 994. Until the local 14-member sportsmen's club built a shooting range in 2003, the Meagher County seat lacked an official shooting area.

"There was no place for the people of White Sulphur Springs to shoot, unless they were trespassing or shooting on national forest land," says Jerry Churchill, manager of the new shooting range.

The Meagher County Sportsmen's Association found a rancher willing to lease 66 acres, convinced the county commission to build an access road, and sought grants from a local foundation and the state Shooting Range Development Program.

"They did a really good job," says Cunningham. "Using in-kind contributions and grant money from the Shooting Range Development Program, they pretty much got the range built in just one year."

The new facility has outdoors targets at 100, 200, and 300 yards and a heated 100- by 27-foot building that houses an indoor .22 range. In the process, the sportsmen's club grew to almost 60 members.

Churchill says that local hunter education, bowhunter education, and 4-H shooting sports classes use the facility free of charge. Young shooters graduating from the programs are given a free one-year pass to the range, with the hope they will become members later.

Providing safe outlets for shooters makes sense because if people want to shoot, many will eventually find someplace to do so. That often leads to trespassing, shooting in public areas off limits to firearms, and other problems.

Terry Hill, an FWP game warden in Great Falls, says unauthorized shooting is commonplace around the city. Enforcement officials in other Montana communities lacking public shooting facilities say the same thing. In Billings, the two private gun clubs have long waiting lists for membership. Shooters unwilling ro wait for a vacancy eventually found a piece of federal Bureau of Land Management acreage 17 miles north of town. The site quickly turned into a glass-littered dump.

"People go there and shoot bottles, televisions, pumpkins, you name it," says Chuck Ward, BLM law enforcement ranger.

Because the Billings area lacks a public shooting range, Ward favors keeping the BLM site open. The spot has a tall earthen backstop, so it can be used without bullets dangerously straying. Another reason, says Ward, is that if the site were closed, "people would just take all these problems elsewhere. We might as well cut our losses and contain the abuse there."

The Great Falls range

Ward estimates that roughly 5,000 people a year visit the unofficial BLM shooting site. Those are numbers the Great Falls shooting complex promoters hope to attract once their new facility is completed. The group

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FIRING FOR FUN Montana's 140 shooting ranges are primarily used by recreational shooters, who shoot for reasons ranging from personal satisfaction to hopes of winning an Olympic medal. Left and below left: At a range near Troy, a father shows his would-be Olympian where her shots hit a target, while a hunter adjusts his scope to ensure accurate shot placement on big game. Below: Shooters at the Deep Creek rifle range near Missoula fire old-fashioned black powder rifles at targets, a time-honored sport that's definitely no flash in the pan.

DEA VOGEL

"I think shooting ranges are a good investment for hunting, because if people aren't shooting, they probably aren't hunting, either."

—Gary Marbut, *President, Montana Shooting Sports Association*

was formed in the mid-1990s out of concern that Great Falls was losing opportunities for recreational shooting. The city has several private rifle, pistol, and shotgun clubs with ranges, but nonmembers find it difficult to use the facilities. Either they can't afford a membership or the clubs are full.

To make matters worse, the city told the local skeet shooting club it wanted to terminate the group's lease and turn the range into a city park. Meanwhile, rifle and pistol shooters wondered how long they could renew their tenuous lease to shoot on a parcel of private land. As opportunities to shoot seemed to be drying up, rifle, pistol, and shotgun shooters agreed that Great Falls needed a public shooting range.

Finding a site was difficult. If too close to the city's growing subdivisions, it would create nuisance noise; too far and it would be inconvenient for shooters. Then shooting range promoters heard about 950 acres of agricultural land 3 miles north of Great Falls, owned by the estate of LeRoy Beckman, a farmer and oil speculator who died in 1997 at age 89. The location was ideal, and the attorney managing the estate said the land could be sold for a public shooting range because such a use would be compatible with Beckman's life-long interest in hunting.

FWP provided $200,000 of the land's $365,000 purchase price, while donations and the Shooting Range Development Program covered the balance. FWP considered its contribution a wise investment. "We sell hunting licenses to thousands of Montanans each hunting season," says Cunningham. "It makes sense for them to have a place to become accurate, ethical shooters."

Bruce Auchly is the FWP regional information and education officer in Great Falls.

Gary Marbut certainly thinks so. President of the Montana Shooting Sports Association, Marbut has long urged FWP to spend more on shooting ranges, and he was the driving force behind the campaign to create the state's Shooting Range Development Program.

"We should have shooting ranges like golf courses—two in every community," Marbut says. "And like golf courses, they would become community assets."

FWP officials agree that public shooting ranges have value. It's the cost, they say, that keeps the agency from doing more. Marbut maintains that more hunting license dollars should go toward shooting ranges, which would produce more hunters.

"I think shooting ranges are a good investment for hunting, because if people aren't shooting, they aren't hunting, either," he says. "No one wants to see interest in hunting tapering off because there aren't enough places to shoot."

DEA VOGEL

SHOOT AND RELEASE The sport of shooting metal animal silhouettes originated in Mexico and spread to the United States in the late 1960s. Upon impact, the metal targets tip back, making it clear from a distance whether they were hit or missed.

Montana lawmakers have strongly supported the shooting range program, providing it with an average of roughly $100,000 each year in state funds, and increasing funding each legislative session.

Cunningham hopes word of the grant program spreads. "We know there are many shooting ranges across Montana that are aging and need to be modernized," he says. "A lot of shooting clubs out there could make good use of grants from the Shooting Range Development Program."

Maybe other communities will be inspired by what's being accomplished in Great Falls. Currently, the new shooting complex has rifle shooting stations at 25, 50, 100, 200, and 300 yards for members, and its pistol range is nearly finished. Later this year, work will begin on the skeet range, several public shooting ranges, and a 50-yard plinking range for families.

"Our ultimate goal is to have national events at ranges for skeet, 1,000-yard rifle, and 600-yard silhouette, along with a place for kids in hunter education to shoot," says Hill, the FWP game warden and a longtime advocate for the Great Falls Shooting Sports Complex.

Eagerly watching all these developments is Watts, the retired biologist. At 67, he figures he doesn't have a whole lot of time left to try his skills on a 1,000-yard range.

"I don't want to be too old to shoot," Watts says.

If progress on the Great Falls range continues at its current pace, he won't have to wait much longer. And if civic leaders and shooting advocates in other communities take advantage of state funding for range construction and improvements, other shooters across Montana won't either.

DEA VOGEL

LIZ LEWIS

A RANGE OF SHOOTING SPORTS

Shooting at targets has nearly universal appeal. Among the many forms of shooting sports (clockwise from above left): Indoor and outdoor ranges test archery skills; with practice, pistol shooters can hit a bull's eye at great distances; a growing number of women participate in shooting sports each year; at trap ranges, shotgunners master the rising, going-away shot commonly found when hunting pheasants and other upland birds.

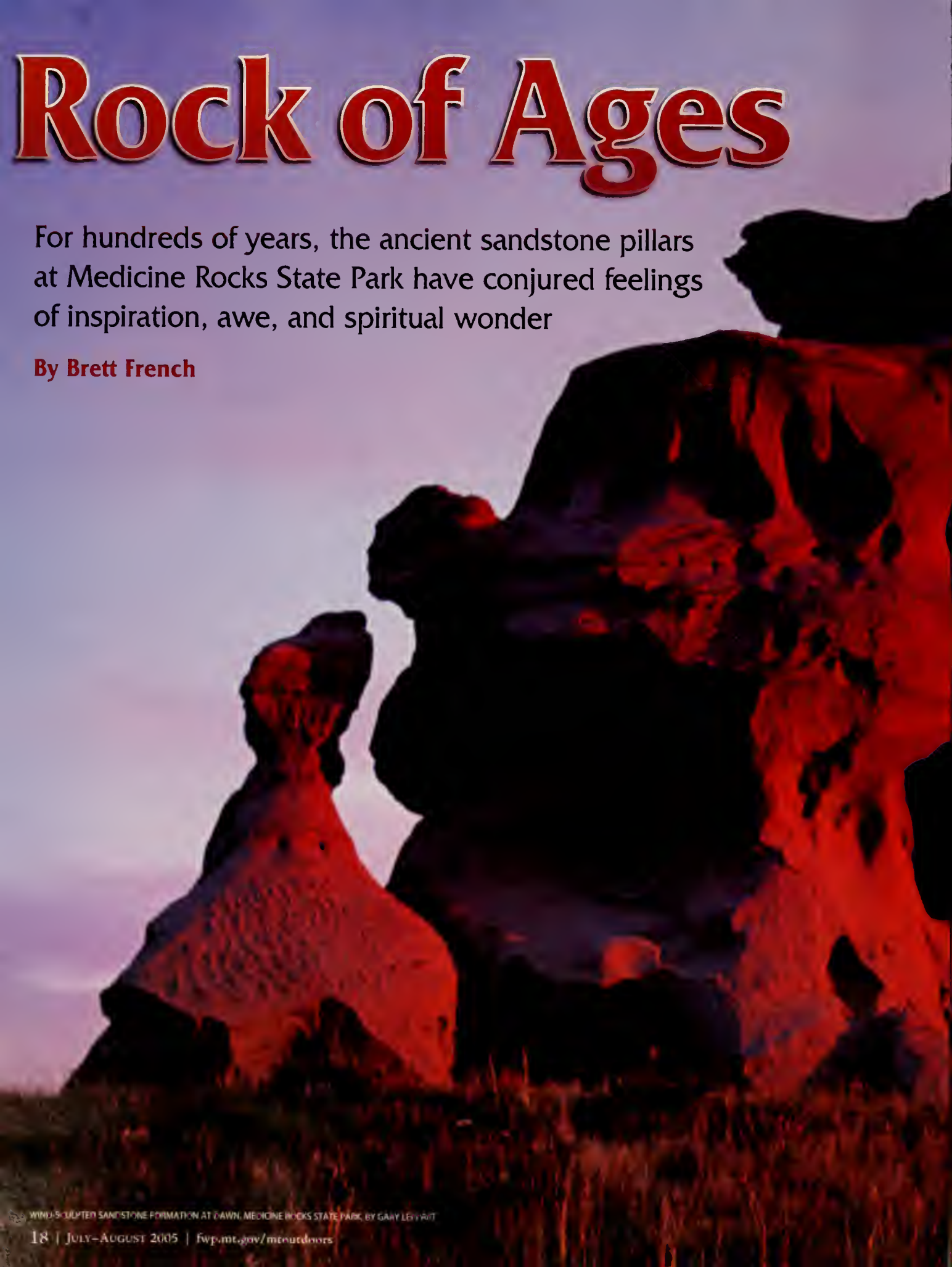
NEAL & MJ MISHLER

LIZ LEWIS

Rock of Ages

For hundreds of years, the ancient sandstone pillars at Medicine Rocks State Park have conjured feelings of inspiration, awe, and spiritual wonder

By Brett French



WIND-SCULPTED SANDSTONE FORMATION AT DAWN, MEDICINE ROCKS STATE PARK, BY GARY LEVIT

It's a place where "the spirits stayed and the medicine men prayed," this site of unusual formations of sandstone jutting 50 feet above the surrounding sage- and pine-spackled prairie.

It's a place where visitors can imagine other-worldly voices in the sound of wind sighing through pine boughs and floating among cathedral-like rocks. In an increasingly noisy and jarring world of car alarms, diesel engines, and blaring TVs, Medicine Rocks State Park in eastern Montana's Carter County still speaks in the hushed tones of ancient times.

Millions of years ago, a gentle freshwater river flowed through this country, cutting a path from today's Miles City southeast into an estuary of a prehistoric sea near what is now Camp Crook, in northwestern South Dakota. The river may have looked much like a larger version of today's Missouri as it moved across the landscape, depositing sandbars over a 5-mile-wide swath.

Slowly the sand built up in underwater dunes roughly 50 feet thick. Under the pressure of their own weight, the dunes compacted into stone, which thousands of years later were shaped by wind and rain into the unique pillars, arches, and other shapes of Medicine Rocks State Park. Eventually, the river's flow slowed, allowing salt water to creep upstream from the estuary. Geologists know this because atop the Medicine Rocks sandstone is a layer of crusty, gray sand riddled with burrows made by marine worms.

By dating pinhead-sized teeth of early mammals from the Torrejonian Age, they also know Medicine Rocks was formed 61 million years ago.

Ed Belt, a retired geology professor from Amherst College in Massachusetts, spent several summers studying the geology of Medicine Rocks. He considers it one of the most remarkable deposits in North America. "You have to go a long way to find a sand deposit of a similar age," he says. "And even then, you won't find thick sand and such a large concentration like you have at Medicine Rocks."

Indian holy site

American Indians didn't need geologists to tell them Medicine Rocks was extraordinary. The Arikara, Assiniboine, Mandan, Gros Ventre, Sioux, and Cheyenne all camped near Medicine Rocks at one time or another. The Sioux Indian name for the unusual stone columns is *Inyan-oka-la-ka*, or "Rock with a Hole in It." Many of the sandstone structures are perforated with holes of various sizes carved out by relentless winds that sweep across the prairie. In one local account, Walter H. Peck wrote that he talked to Charging Bear, a Sioux Indian who said Medicine Rocks was a place "where the spirits stayed and the medicine men prayed." Though Indians no longer camp in the area, the site still contains old tepee rings, stone and bone artifacts, and baked clay cookware.

Warren White, 72, grew up in Ekalaka, 14 miles south of the park, and is curator of the town's Carter County Museum. Old photographs adorning the walls of the museum show Ekalaka picnickers dressed in their Sunday best posed in wagons, buggies, and Model Ts next to the fantastic rock formations nearby.

White recalls an old-time rancher who lived in the area in the late 1800s who told him stories of the Sioux and Northern Cheyenne tribes using Medicine Rocks as a sacred site. "I've heard the stories ever since I was a kid," he says. "Medicine Rocks is considered sacred ground."

There are many such "medicine rock" sites across the West, says Renee Sansom Flood, an American Indian writer living in Billings. Flood says most sites were used for vision quests, but the rocks also would have provided shelter from storms and lookout posts for spotting enemies and buffalo.

According to Conrad Fisher of the Cheyenne Tribal Historic Preservation Office in Lame Deer, Medicine Rocks was also a place where tribal members stopped on the way from the Yellowstone River Valley to the Black Hills in summer and early fall. Among the attractions were medicinal plants, and seashells used for decorations.

"The story I grew up with is that Medicine Rocks was the site of an annual religious gathering," says Brice Lambert, who publishes the *Ekalaka Eagle*. Lambert, who remembers childhood visits to tepee rings now within the park boundaries, says one of the area's biggest attractions to those traveling the semiarid country was its year-round springs. A pump now taps the springs to bring fresh water to the park's entrance, where locals fill jugs and bottles.

Theodore Roosevelt was one of the first to write about Medicine Rocks when he visited the area during a hunting trip in 1883. He described the formations in *Hunting Trips of a Ranch Man*: "Altogether it was as fantastically beautiful a place as I have ever seen; it seemed impossible that the hand of man should not have had something to do with its formation."

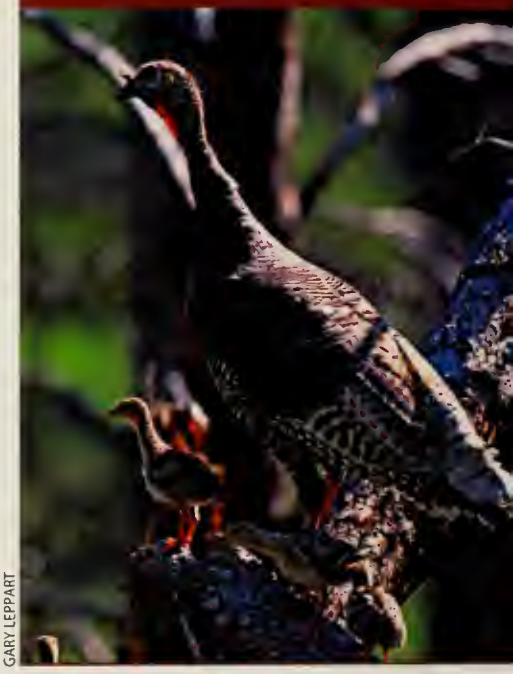
Settlers first arrived in the region in the early 1880s, following Texas cattle drives into the free rangelands of eastern Montana. The names and dates of cowpunchers moving through the area can still be seen carved into the rock formations' soft sandstone. One artist attracted to the area, a shepherd who may have lived in a rock cave around 1905, carved in the sandstone a profile of a woman's head that is still visible.

It's now illegal to autograph or otherwise deface the rocks. However, as Lambert notes, "That's not to say it's not still done." Fortunately, most visitors now are either deterred by the law or understand why it's wrong to disfigure these historic—and for some Indians, religious—rock structures.

The first white person to settle the region was Claude Carter. In 1884, his wagonload of logs bogged down near Russell Creek. Carter unloaded the logs and decided the site would be as good a place as any to build a saloon. From these modest beginnings grew the small town of Ekalaka, known mostly today to deer and turkey hunters who stop on the way to nearby Custer National Forest.

CARTER COUNTY MUSEUM

HISTORIC VISITORS Right and below right: American Indians considered the sandstone formations of Medicine Rocks sacred. They visited the site for hundreds of years, often while traveling between the Yellowstone River Valley and the Black Hills. Later, early Ekalaka residents (above) picnicked at the formations. Current residents living in Medicine Rocks State Park include mule deer, antelope, and Merriam's wild turkeys (below).

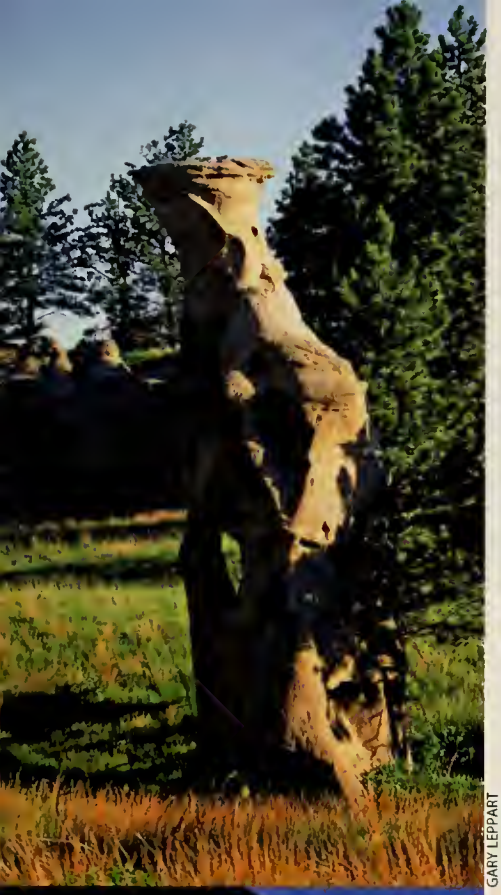


GARY LEPPART

Public ownership

For decades Medicine Rocks was privately owned. The county took ownership during the 1930s after the owners forfeited tax payments. In 1957, the Carter County Commission transferred ownership of 320 acres to the state of Montana. Originally, the land was managed by the state Highway Department, which graveled the roads and built picnic tables and fireplaces. The state Parks Division began to manage Medicine Rocks in 1965 when the site became a natural reserve.

Brett French, Billings, is a freelance writer and a reporter with the Billings Gazette.



GARY LEPPART

CHUCK HANEY

Strapped for adequate funds to maintain out-of-the-way parks such as Medicine Rocks, Montana Fish, Wildlife & Parks began charging a $3 entrance fee in 1991 to cover some of the roughly $20,000 a year it cost to maintain the park.

Local park users weren't happy with the new fee. In a 1992 *Billings Gazette* article, *Ekalaka Eagle* editor Lois Lambert was quoted as saying, "We gave it to the state, and now they're charging us to use it." So mad were members of the Carter County Museum that, for the first time in its 40-year history, they held the museum's annual summer picnic in Ekalaka rather than at Medicine Rocks State Park.

After meeting with local residents, FWP officials proposed an alternative to the entrance fee, and in 1993 the Montana legislature eliminated the access fee by creating a new park category. Medicine Rocks became one of 15 "primitive" parks—no fees but also no garbage pick-up, requiring visitors to pack out refuse they bring in.

Though all Montana state parks are popular with local residents, Medicine Rocks is especially so. Many locals consider the park part of their heritage, and it's one of the few amenities in Ekalaka, population 410. What's more, nonresident tourists rarely find their way to Medicine Rocks. "We're not on a major road to anywhere," says Brice Lambert, "so you don't necessarily stumble onto it."

Marvelous shapes

Those who do, however, are in for a treat. Foremost are the rocks themselves. For thousands of years, wind and rain have carved the soft stone structures into hundreds of shapes, both fantastic and strangely recognizable. Kids delight in seeing "hidden" shapes. There's an elephant's head, an enormous skull, gigantic mushrooms, and spires resembling an ancient church. If you didn't know better, you'd swear one lone sandstone pillar was the chimney left standing after a house burned down.

In addition, the rocks form natural stone bridges, overhangs, and caves, making parts of the area resemble a smaller version of southeastern Utah's arches region.

In addition to the stone "animals," real wildlife abound in and around the park. Tiny rodent tracks crisscross the sand at the base of stone pillars. Turkey vultures and golden eagles soar on thermals overhead. In nearby pine-covered ridges, Merriam's wild turkeys move warily into openings to peck at insects and seeds. Mule deer, pronghorn, sharp-tailed grouse, and more than a dozen species of grassland songbirds are common.

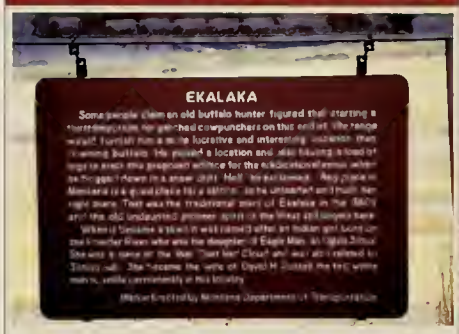
The park landscape also attracts climbers and explorers such as Sue Cook and her family, of Ekalaka, who are attracted to the rock holes, ledges, and other hidden spots.

"It's really neat to crawl around in those caves," says Cook. "You always find something new. I almost hate to take my boys there because I can't get them to leave."

Who can blame kids for wanting to hang around the rocks a bit longer, especially late in the day, when the temperatures start to cool? On a late summer evening, the lowering sun leaks light between the clouds on the western horizon. A steady wind blows a haunting, ragged tune through flutelike holes in the rock formations.

As the sun sets, a dark royal purple rims the bright orange horizon. With nightfall pushing nearer, a half moon slowly appears through a notch in the rocks to the east. An owl hoots. Then all is quiet but for the sound of the Medicine Rocks formations themselves, still speaking as they have for thousands of years in their ancient, otherworldly voice.

MEDICINE ROCKS STATE PARK



CHUCK AND GAIL ROBBINS

IF YOU GO

The most important thing to know about Medicine Rocks State Park, other than its beauty, is that it's really out there, nearly to South Dakota's Black Hills.

Directions: To reach the park from Miles City, head 85 miles east on U.S. Highway 12 to Baker, then another 25 miles south on Montana Highway 7. The park is 14 miles north of Ekalaka.

Open: The park is open around the clock, year round.

Facilities: Campsites, toilets, water, picnic tables. Pets are allowed.

Activities: Camping, photography, picnicking, hiking, wildlife viewing.

For more information: Call the FWP regional parks office at Miles City, (406) 234-0900, or go on-line to fwp.mt.gov.

A Close Look at Bird Watching

How to get started in Montana's fastest-growing outdoors activity

by Becky Lomax

BERT GILDART

DONALDMJONES.COM

"I'll never hunt or fish with the same eyes."

Ron Aasheim, a dyed-in-the-wool elk hunter, experienced this optical epiphany one morning last summer along the Blackfoot River. He was out with longtime friend Bob Martinka, a retired Montana Fish, Wildlife & Parks wildlife manager and bird-watching expert who lives in Helena. Aasheim, also of Helena, had visited the river many times before as an angler, but this was the first time he spent the day looking into the trees rather than the water. What he discovered was a whole new dimension of wildlife.

"Bob really raised my awareness of things in the outdoors I'd never really noticed before," Aasheim says.

For instance, Martinka pointed out an American redstart, a black and orange bird Aasheim hadn't noticed before. "Heck, I didn't even know there *was* such a bird," he says.

Aasheim, who heads FWP's Conservation Education Division, isn't alone in discovering the joys of bird watching. As people across the country increasingly head outdoors to recreate, birding has become wildly popular. According to the U.S. Fish and Wildlife Service, birding is America's fastest-growing outdoors activity. And Montana is leading the way, with a participation rate of 44 percent, double the national average and highest of any state. Fortunately for Treasure State birders, Montana has plenty of places to see a wide range of winged wildlife. And thanks to the Internet and a growing number of field guides and birding festivals, find-

BECKY LOMAX

BECKY LOMAX

WATCH AND LEARN Birds such as saw-whet owls take on a new dimension when viewed through binoculars. Field guides and a notebook are other essential bird-watching tools. At right: Audubon Society official Harriet Marble leads a Becoming an OutdoorsWoman birding trip.

BECKY LOMAX

ing where and when to go birding across the state has never been easier.

Why watch?

It's never been so important, either. Ecologists point out that observing wildlife provides clues to the world around us. The survival and health of birds in particular (because they are especially sensitive to environmental changes) can indicate an ecosystem's well-being. When birds start disappearing, something has gone wrong. Conversely, the reappearance of declining species, such as bald eagles and other fish-eating birds, indicates a decline in pesticide use or other environmental improvements.

Of course, most people don't watch birds to save the planet but rather to observe their strikingly beautiful colors and diversity of shapes, sizes, behaviors, and plumage.

For dedicated participants, bird watching often takes precedence over vacations, jobs, and even family life. "I was a casual birder for many years, until retirement," says Martinka. "That's when the addiction set in."

Like many participants, Martinka says birding is "an excuse" to get out into the natural world. "It's just like fishing, hunting, or other activities that provide a reason for being outdoors," he says. "It's always fun to walk along a stream or through a forest, but it's even more so if you're doing it purposefully, with your senses alert, trying to discover something new or interesting."

Such sentiments are shared by bird watchers of all ages. Kids can look through binoculars as easily as their grandparents can. In fact, bird watching is one of the few outdoors pursuits an entire family can do together.

Kristi DuBois, who coordinates FWP's Native Species Management Program from her office in Missoula, says she can't think of an easier outdoors activity.

"You can watch birds almost anytime and anywhere," says DuBois, who looks for birds while hiking, skiing, boating, and even driving. "The other great thing is that anyone can do it. You don't have to be an expert or know everything in the field guides. Plus it's free—no license needed."

How to spot birds

You don't even need to leave the house to watch birds.

"Start birding in your own backyard," says Harriet Marble, a Montana Audubon Society board member and chair of the organization's Montana Bird Records Committee, which tracks unusual bird sightings throughout the state.

Marble, of Chester, began birding at home as a child, learning to identify birds using an old field guide. Field guides are still essential tools for birding, she tells beginners. Fortunately for newcomers, several beautifully illustrated bird books have been published in recent years (see sidebar, page 26). Because birds don't always appear in the wild exactly as they do in pictures, many bird watchers own two or more guides and compare the images.

Though a guide is necessary for positive bird identification, Marble advises birding beginners to resist the temptation to open an identification book the moment they spot a bird.

"At first, just watch the bird for a bit," she says. "I try to observe as much detail as possible."

If several birds are flitting about, focus on just one. Carry a small notebook and jot down notes about the bird for help later when referencing the field guide.

Begin at the beak (or the bill, for waterfowl), observing the shape, length, thickness, and color. Work down the bird, checking the wing shape and size, then tail length and shape. Look for patterns or field marks such as eye patches or rings, dots, lines, and stripes. Check for wing bars and flashes of undercolor that show when a bird flutters. If more than one species appears, compare sizes. Only after you've amassed these details, says Marble, should you open your field guide.

Most bird books catalog

Which Binoculars?

Birds won't let you get close enough for a good look, so birders need binoculars. But with various models ranging in price from $50 to $1,600, which pair should you buy?

Recently, I went looking to purchase a pair of binoculars, and here's what I learned:

Those numbers: Binoculars are described with two numbers, such as 7X32. The first denotes magnification. The second is the size, in millimeters, of the objective lens (the one closest to the bird). This tells you how much light the lens can gather, which is important when birding at dawn and dusk. The bigger the objective lens number, the more light it gathers.

For magnification, I'd go with 7X or 8X, but no higher. The image in binocs I tested above 8X wiggled too much. For field of vision, go with something between 32 and 42. Anything less, such as found in pocket binoculars, doesn't let in enough light and creates a narrow field of view. Binocs with too great a field of vision, such as 50, are often too heavy to carry. I eventually decided on 8X42.

Porro prism versus roof prism: The old-fashioned porro prism binoculars are wider at the front than the back. Roof prisms are the "two tube" models. Both work equally well, but many people like the slimness and lighter weight of the more costly roof prism binoculars.

Weight: I took the advice of one on-line expert who said he preferred those that weighed less than 24 ounces.

Price: I'd love to own top-of-the-line German binoculars, but I can't afford them. Yet spending $100 on a cheap model wouldn't provide me what I need. Fortunately, many models of waterproof binoculars with clear, sharp optics range in price from $200 to $350.

To find the pair right for you, type "best binoculars" into a search engine and look at the dozens of on-line reviews and comparisons. One that's especially worth reading was produced by the folks at the Cornell University Lab of Ornithology: http://birds.cornell.edu/publications/livingbird/spring99/binos.html.

bird species from the oldest to the youngest along the evolutionary scale: Loons and grebes cover the first few pages, and songbirds pile up at the back. For easy comparison, the guides cluster birds in similar groupings and families.

To start identifying a bird, begin the process of elimination. A bird swimming in a lake, for instance, is probably not a woodpecker, and shorebirds rarely appear in mountain forests.

From there, simply look for birds in the guide that generally match your observations, until you get it narrowed down to one species.

Another clue, says Marble, is to check distribution maps, included in most field guides. As an example, she notes, "We're not likely to see cardinals in Montana." Read habitat descriptions carefully. You won't see high-altitude species such as willow ptarmigans in your low-elevation backyard.

To aid in identification, listen to birds. "Start with what you hear in your yard," Marble says. "I like to watch the bird actually sing."

Substituting words for notes helps with memory. *Chickadee-dee-dee-dee* is the call of the black-capped chickadee. The most common of the American robin's songs is *stop—stop—stop*. And if you hear, *quick, three beers*, then an olive-sided flycatcher is likely nearby. Commercial birdsong tapes and CDs can help you make the audio connection more quickly.

Another way to learn bird identification is to find an expert and ask to tag along. Meet experienced birders by hooking up with an Audubon Society chapter, most of which sponsor field trips open to beginners. Some years, FWP offers a Becoming an Outdoors-Woman birding class. The Glacier Institute, Yellowstone Association Institute, Raptor View Research Institute, and The Nature Conservancy of Montana also sponsor birding trips. Or ask at your local bird food store for the names of friendly, expert birders in your neighborhood.

When to watch

You can spot birds any time of year, but they are most abundant during spring and fall migrations. Many birding festivals celebrate these predictable flights. In May, check out the Bitterroot Birding Festival at Lee Metcalf National Wildlife Refuge, the Yellowstone Valley Audubon Society's Birding Classic, and International Migratory Bird Day at the National Bison Range. Each June, Glendive observes the return of turkey vultures at Makoshika State Park during Buzzard Days, and the Montana Audubon Society sponsors several bird festivals. In early October, the Bridger Raptor Festival held north of Bozeman celebrates one of North America's largest golden eagle migrations.

Martinka says that if he had to pick one month for watching birds, it would be June, when most of Montana's several hundred nesting species are mating. Male songbirds in particular display colors and sing operatic trills while courting.

The best time of day to spot birds is at dawn, says Marble. That's when they sing to establish territory and forage for food after a long night of roosting. Dusk is good too, she adds, because birds usually feed before nightfall. If you hope to find owls, however, night is usually the time to be out listening and looking.

Where to watch

Birding in your backyard will soon make you an expert—on birds in your backyard. That's not a bad place to start, but observing more of Montana's 416 species requires some travel.

"The key is to change habitats—lakes, forests, prairies—and keep going different places," says Marble.

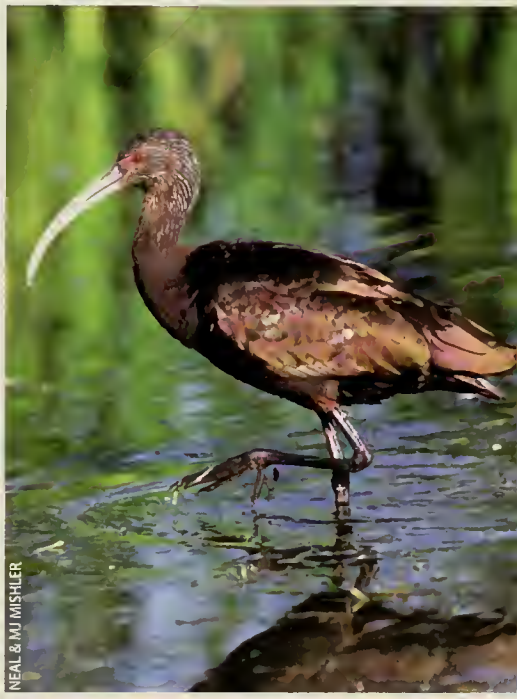
Montana has abundant and diverse ecosystems, each containing birds unique to those habitats. National parks, wildlife refuges, wildlife management areas, and state parks teem with bird life. Many public wildlife areas publish bird lists to aid with identification.

To increase the odds of seeing even greater bird diversity, go to where two habitats meet, such as where a grassland becomes aspen grove or where a fen intersects with conifer forest.

Almost without exception, the best place to see birds is near water, including streams, rivers, ponds, lakes, marshes, bogs, and sloughs. Roughly 90 percent of Montana's bird species use riparian and

Becky Lomax is a freelance writer in Whitefish.

BIRDING CAPITAL, USA Renowned for its abundant hunters and anglers, Montana also has the nation's highest birding participation rate. The 44 percent of Montana adults who watch birds for recreation is double the national average. Among the 416 bird species seen in Big Sky Country (clockwise from above right): mountain bluebird, white-faced ibis, harlequin duck, varied thrush, burrowing owl, and black-backed three-toed woodpecker.



wetland habitats for breeding and nesting. Streams and rivers are especially attractive to birds in Montana's dry eastern half, says Martinka, who frequently looks for birds along prairie waterways.

Many people love to follow official routes and trails, and birders are no exception. That's why FWP teamed up with 30 other state and federal agencies and dozens of communities and private conservation groups to establish the Montana Birding and Nature Trail. FWP's DuBois, a member of the steering committee developing the trail, says that over the next few years the project aims to identify, map, and sign hundreds of miles of roads and hiking trails linking Montana's top birding locations. Already portions of the trail have been established in the Blackfoot and Clearwater drainages, the Bitterroot Valley, and the Helena and Gallatin valleys. You can find maps of these birding trails on-line at montanabirdingtrail.org/about.htm.

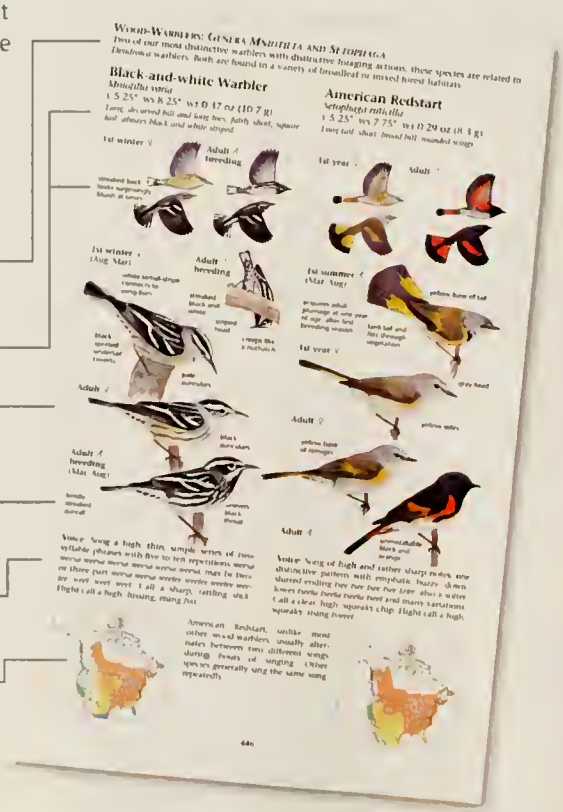
Trails, festivals, and field trips are fun ways to see birds and socialize with like-minded birders, but they aren't essential to the sport. All it really takes to watch birds is a pair of binoculars, a pocket notebook, and a field guide. Pull up a chair and watch out the back window. It won't be long before you see that those "identical-looking" little brown birds are actually many different species. And once that happens, you might well become like elk hunter Ron Aasheim and never look at the outdoors with the same eyes again.

For more information on bird watching and conservation, contact Montana Audubon at (406) 443-3949 or www.mtaudubon.org.

Field Guides

Several excellent field guides have been published in recent years, making it easier than ever to identify bird species. Some of the best are the *National Geographic's Field Guide to Birds of North America*, *The Sibley Field Guide to Birds of Western North America*, and a newly updated version of the old standby, *Peterson Field Guides: A Field Guide to Western Birds*.

Using a field guide is easy. Once you've watched a bird and noted its various characteristics, thumb through the guide until you begin to find pictures of birds similar to what you noticed. Information on each page is usually organized like this one from the *Sibley Field Guide*:


Black-and-white Warbler
American Redstart
General scientific classification
Description of prominent features
Color illustrations or photographs showing both sexes and various angles of the bird, perched and in flight
A description of the bird's song
Maps showing winter and summer ranges

EASY DOES IT Birders who take the sport to its highest level may invest thousands of dollars in binoculars and spotting scopes (below), learn to identify birds by sound alone, and travel around the world to spot new species. Yet for most people, birding can be simply a backyard adventure. Many bird species in Montana live within city limits, such as the evening grosbeak (right), which is commonly found at bird feeders.

BECKY LOMAX

The Big Picture

Watching birds is fun, but monitoring birds to determine bird survival and productivity can be hard work.

BY BECKY LOMAX

Eight times each summer, well before sunrise, Graham Taylor sets up "mist" collection nets at a study site on the FWP Beartooth Wildlife Management Area and another near Ulm. Each of the dozen 37-foot-long superfine-gauge nets (hence the name "mist") is held aloft by two 8-foot-high aluminum poles. The nets are designed and placed to capture breeding neotropical migrants such as warblers.

Taylor, an ardent bird watcher and the FWP regional wildlife manager at Great Falls, has been setting nets and banding birds at these same sites each summer for the past 14 years.

His work is part of a long-running bird monitoring project being conducted across North America. Called the Monitoring Avian Productivity and Survivorship (MAPS) Program, the project is a cooperative effort involving public agencies, private organizations, and volunteers across North America. It began in 1989, when biologists became concerned about reports of declines in the number of warblers and other neotropical species that spend winters in Central America and summers in the United States and Canada. Of the hundreds of MAPS monitoring stations set up across the continent, 12 are in Montana.

After identifying, aging, weighing, measuring, banding, and then releasing captured birds, Taylor submits his data to the California-based Institute for Bird Populations, which coordinates the MAPS Program. The information helps the institute assess and monitor species population trends and survival rates. That, in turn, helps guide bird and habitat management across the continent.

The banding work is done under close regulation by the federal U.S. Geological Survey Bird Banding Laboratory in Maryland. The USGS is responsible for protecting and managing most migratory bird species.

One of the most common birds Taylor captures is the yellow warbler. "I've banded hundreds since 1992," he says. Because he often captures the same birds year after year, Taylor has found that yellow warblers live on average only two years and rarely reach age six.

In addition to information on survival rates, the monitoring provides clues to bird productivity. The nets are set one day out of every ten, from May 31 to August 10. As the warblers are preparing to leave for tropical climes in late summer, the proportion of adult to young-of-the-year birds indicates the productivity of a species.

Taylor says his involvement in the project reflects FWP's interest in nongame bird management.

"It's extra work," he says, "but I hope I'm inspiring other people to do more for these birds."

Read more about the project at www.birdpop.org.

A yellow warbler, mist-netted.

WHO GETS THE WATER?

MARK HENCKEL

HIGH AND DRY Eight of the sixteen boat ramps on Montana's Fort Peck Lake (top) are now closed due to drought and water releases by the U.S. Army Corps of Engineers. Meanwhile, commercial barge traffic (above) in downstream states keeps chugging along.

Montana and other upstream states want more of the Missouri River held in reservoirs for angling, boating, and fish populations. Downstream states say they need the water for moving barges. So far, the barges are winning.

BY ANDREW McKEAN

A joke making the rounds in eastern Montana lately suggests that if boat ramps on Fort Peck get extended much farther, a person will be able to drive a car across the lake.

"The Highway Department will need to come up with route numbers for those ramps," quipped one angler at a recent meeting to discuss low water at Fort Peck. This spring, the reservoir was 36 feet below normal full pool—the lowest since 1955, when the lake's water was used to fill North Dakota's newly created Lake Sakakawea, the next reservoir downstream on the Missouri River.

Building roads across the dry lake bed is no laughing matter for Darin McMurry. As the U.S. Army Corps of Engineers' Fort Peck reservoir manager, McMurry is responsible for maintaining public access to the 100-mile-long reservoir. Over the last five years, the Corps has been extending, replacing, and relocating boat ramps as the lake level drops farther and farther from developed boating access points. This spring, McMurry directed the construction of a mile-long gravel road from the existing boat access at Hell Creek State Park to the nearest deep water. The new road, along with a 2-acre parking lot and concrete-slab boat ramp, will cost the Corps of Engineers roughly $175,000. So far, "chasing" Fort Peck's receding water with accessible ramps has cost nearly half a million dollars.

Why is Fort Peck's water retreating so quickly? One major factor is Montana's six-year drought, which prevents the Missouri from filling the reservoir to normal levels. But many Montanans who use or live near the lake say the drought's damage has been worsened by bad water management. They say the Corps of Engineers stores and releases Fort Peck water to benefit Missouri River barge traffic and other politically powerful interests far downstream at the expense of upstream anglers, boaters, and fish and wildlife populations—including several federally endangered species.

Due to Fort Peck's chronically low water, weeds thrive on the exposed shoreline. Dust storms reminiscent of the "Dirty Thirties" blow in off the barren lake bed. More than anything, however, it's the growing lack of lake access that's causing consternation. At Crooked Creek, near the mouth of the Musselshell River, there is no longer even a lake to access. The marina there looks out on an expanse of mudflats, where last fall a herd of elk had to be rescued after becoming mired in the morass. The reservoir has receded 15 *miles* from the site's boat ramp, which from the air looks like a gigantic bleached bone lying on the dry lake bed.

If anglers and other boaters can't reach Fort Peck, they head someplace else—and carry their wallets with them. Business owners in towns surrounding the reservoir say the lack of access is harming their bottom line. Robert Twiford, who owns a sporting goods store in Malta, saw business decline by over 20 percent when the boat access at Fourchette Bay in Phillips County was closed in 2004 due to low water. Eight of Fort Peck's sixteen access areas have been closed, and Twiford says that if many more shut down, his other business, a Glasgow boat dealership, will be in trouble.

TAMING A HUNGRY RIVER

The Missouri's widely fluctuating water has been giving people heartburn for more than a century. It was once dubbed "the hungriest river ever created." Submerged timber snags in the shallow, ever-shifting current impaled steamboats. Powerful early spring ice jams and floods tore up banks, riverside crop land, and even entire communities along its 2,300-mile-long floodplain.

Though destructive for people along the river, the Missouri's spring floods created wildlife habitat that sustained hundreds of of fish, bird, and mammal species in the main channel, backwater sloughs, and across the floodplain. Many species, such as the pallid sturgeon, evolved in the seasonal ebb and flow of the river. Adults spawned when the river rose, and juveniles grew in slow-moving backwater nurseries. Frequent flooding also recharged river-bottom fields with nutrient-rich silt, making the Missouri one of the most agriculturally fertile corridors in the world.

JEFF HENRY/ROCHE JAUNE PICTURES

ECONOMIC ENGINE According to the U.S. Army Corps of Engineers, fishing and other recreation on Missouri River reservoirs generates $87 million per year. The economic value of shipping gravel and fertilizer in downstream states? $7 million.

The first large-scale project to manage the river was Fort Peck Dam, completed in 1937. The dam was built to create jobs, end spring flooding, provide water for irrigation, and produce electricity. In the 1950s and '60s, the Corps built five more dams in North Dakota, South Dakota, and Nebraska, which pool the Missouri into a series of reservoirs and allow careful regulation of its flow to the river's confluence with the Mississippi at St. Louis.

The Corps outlines its management of

the river in a document called the Missouri River Master Water Control Manual. Commonly known as the Master Manual, it was last revised in March 2004 after an acrimonious 15-year battle among various states and interests in the Missouri River basin that still continues. Upstream states, mainly Montana and the Dakotas, want to keep more water in their reservoirs for recreation and as a hedge against drought. Downstream states, mainly Missouri, demand that the reservoirs release water to float commercial barges that carry gravel and fertilizer and to maintain municipal water supplies. Also weighing in are states in between that rely on the river for municipal waterworks and crop land irrigation. And the U.S. Fish and Wildlife Service and other conservation agencies and organizations are concerned about river habitat for fish and wildlife, including the federally endangered pallid sturgeon, piping plover, and least tern.

NO AGREEMENT

Richard Opper thinks it's possible to find a fair compromise among the Missouri River basin's diverse interests, but his attempts to do so left him disillusioned about the process for governing the river's water. Currently head of Montana's Department of Environmental Quality, from 1998 to 2004 Opper was director of the Missouri River Basin Association, a coalition of Missouri River states and Indian tribes. During his tenure, Opper nearly achieved the Holy Grail of water management. In 1999 he led negotiations that would have given each state and interest a portion of their preferred amount of water. This collaborative agreement—states in the basin would conserve water in years of drought and then benefit proportionally in years when water was abundant—was scrapped when the state of Missouri left the negotiating table. As a result, Montana and other upstream states contend the revised Master Manual continues to favor downstream interests.

Andrew McKean is the FWP regional information and education officer in Glasgow.

Opper maintains that politics motivated Missouri's departure. The politically connected barge industry scrapped the compromise, threatened by measures that would have reduced the number of months it could use the river during drought years.

Opper says the state of Missouri uses the navigation industry as a tool to keep more water in the river downstream. "As long as navigation is being served, since it's the big water user, all of the Missouri's other uses, primarily municipal and industrial, are also being served," he explains.

The 15-year collaborative effort wasn't completely for naught and may benefit Missouri River management over the long haul. For example, says Opper, the revised Master Manual contains provisions for holding back some water in the reservoirs during times of drought, something the Missouri River Basin Association recommended. "Had Missouri gone along with this in 1999, we could have had an additional five years of conservation that would have saved several million acre-feet of water," Opper says. In addition, he points out, the navigation season was reduced last year and may be shortened further in 2005.

OUTMANNED Fort Peck, Sakakawea, and Oahe are the main Missouri River reservoirs feeling the pinch from water releases. The combined congressional delegation (9) of Montana, North Dakota, and South Dakota is two fewer than that of just one downstream state, Missouri (11).

MONTANA OUTDOORS

$7 MILLION VS. $87 MILLION

Even with the shortened navigation season, upstream interests maintain that navigation still receives a disproportionate amount of the Missouri's water.

"It's hard to understand how the dwindling economic impact of navigation could outweigh the tremendous business surrounding recreational use," says Wayne Nelson-Stastny, a senior fisheries biologist for the South Dakota Department of Game, Fish and Parks and a critic of the Corps's water regulation policy. Nelson-Stastny points to the Corps's own estimates that the Missouri River navigation industry, which has seen its shipping tonnage decline by more than 50 percent since 1977, generates just $7 million annually in economic benefits. Yet the recreation industry is worth more than ten times that. In 1994, the Corps estimated economic benefits of Missouri River impoundments, primarily from walleye and other sport fishing, at $87 million.

Paul Johnston, a spokesman for the Corps's Omaha District office, says his agency apportions water according to eight congressionally authorized dictates: flood control, hydropower generation, irrigation, navigation, water supply, water quality, recreation, and fish and wildlife. "It's important to note that these are not listed in any particular order," says Johnston. In other words, the Corps is not placing any one value of the Missouri's water, such as irrigation or navigation, over another, such as recreation.

Try telling that to Don Pfau, a Lewistown sporting goods store owner and longtime participant in river basin issues. He says the Corps clearly favors downstream navigation over upstream recreation.

"Montana is providing 70 percent of the water to float those barges," Pfau says. "What do we get in return? We're told to pray for rain. Meanwhile we have stores in Circle and Jordan and across eastern Montana shutting down. When the Fort Peck [fishery] is cooking, it's a huge economic engine. But when it's down, the whole economy is down."

In addition to boat access, Fort Peck's low water is also harming the main reason those accesses exist—Fort Peck's renowned fisheries. Populations of minnows, yellow perch, and other fish that spawn on flooded shoreline vegetation are declining. So are the walleyes, salmon, and northern pike that feed on those forage species.

"The drawdown has caused a general decline in productivity, especially with

northern pike and perch," explains Mike Ruggles, Montana Fish, Wildlife & Parks biologist for Fort Peck. "There's no vegetation for them to spawn on, so we are now seeing very few young pike, which we need to become the larger pike of the future that anglers want to catch. Because they're shoreline spawners and foragers, pike are a real indicator species of the habitat we've lost as the lake level drops."

The low water level has also hampered FWP's ability to capture adequate numbers of Fort Peck's spawning walleyes, which biologists use as an egg source for rearing walleyes and stocking the fish in other Montana lakes. Another casualty is the pallid sturgeon, a federally endangered species in the Missouri River below Fort Peck Dam. Bill Wiedenheft, FWP regional fisheries manager in Glasgow, explains that before the dam was built, the river created sandbars and other sturgeon habitat during spring floods. The flow of warm river water also nourished aquatic insects and other sturgeon food. With periodic flooding now replaced by a steady flow of clear, cold water from the dam's base, sturgeon have lost those historic habitats.

Wiedenheft has urged the Corps to conduct a test in which it would periodically send large volumes of warmer, muddier water over Fort Peck's spillway, mimicking historical spring flows.

"Then we could see if pallids and other native fish benefit," he says. "If they did, then one key to the recovery of pallid sturgeon might be to manage Fort Peck as a more natural system, with high spring flows and lower summer and fall releases. But we can't do a spillway test until the lake fills."

When that will happen is anyone's guess. Eventually, rain and snow will restore the lake to its normal level. But that eventuality is being delayed by the Corps, which continues to release water for irrigation, municipal uses, and navigation downstream. According to Opper, the federal agency should be storing water in the upstream reservoirs, just as people save money in case of emergency.

"If you have a short drought and you don't need to draw on your savings, you're okay," he says. "But if you have a long recession—or drought—and you spend your savings, you don't have anything to fall back on. That's what's happening on the Missouri River. The downstream states bet we would have a relatively short drought."

As a result, he explains, the upstream reservoirs haven't held back the water the downstream states may soon desperately need.

"The issues that downstream states really care about—cooling water for power plants and water for municipalities and navigation—may end up without adequate water because they bet short-term self-interest over long-term conservation," Opper says.

If Missouri and the other downstream states lose that bet, Montana and the Dakotas won't have much sympathy. They have been suffering a water shortage on Missouri River reservoirs for years. Ruggles notes that people not familiar with Fort Peck may not understand the significance of water levels being down 5 or 10 feet in a year. "But every foot it drops can expose another 100 or more feet of weeds and mudflats and draws the water that much farther from the boat ramps," he says.

Even worse is that each decline in Fort Peck's water level delays recovery. "Every foot we now lose to downstream use means we need that much more water just to get to where we were last year," he says. "Much less back to where we want to be."

Scientist that he is, Ruggles takes a long view of the situation. Rains will return, and he's hopeful that downstream needs will abate, allowing upstream reservoirs to fill.

"When our water starts coming up, we're going to cover a lot of vegetation," Ruggles says. "We're going to grow a lot of minnows, and we'll have some phenomenal walleye and pike production. But to get there, the Corps has to keep more water in Fort Peck than it's letting out."

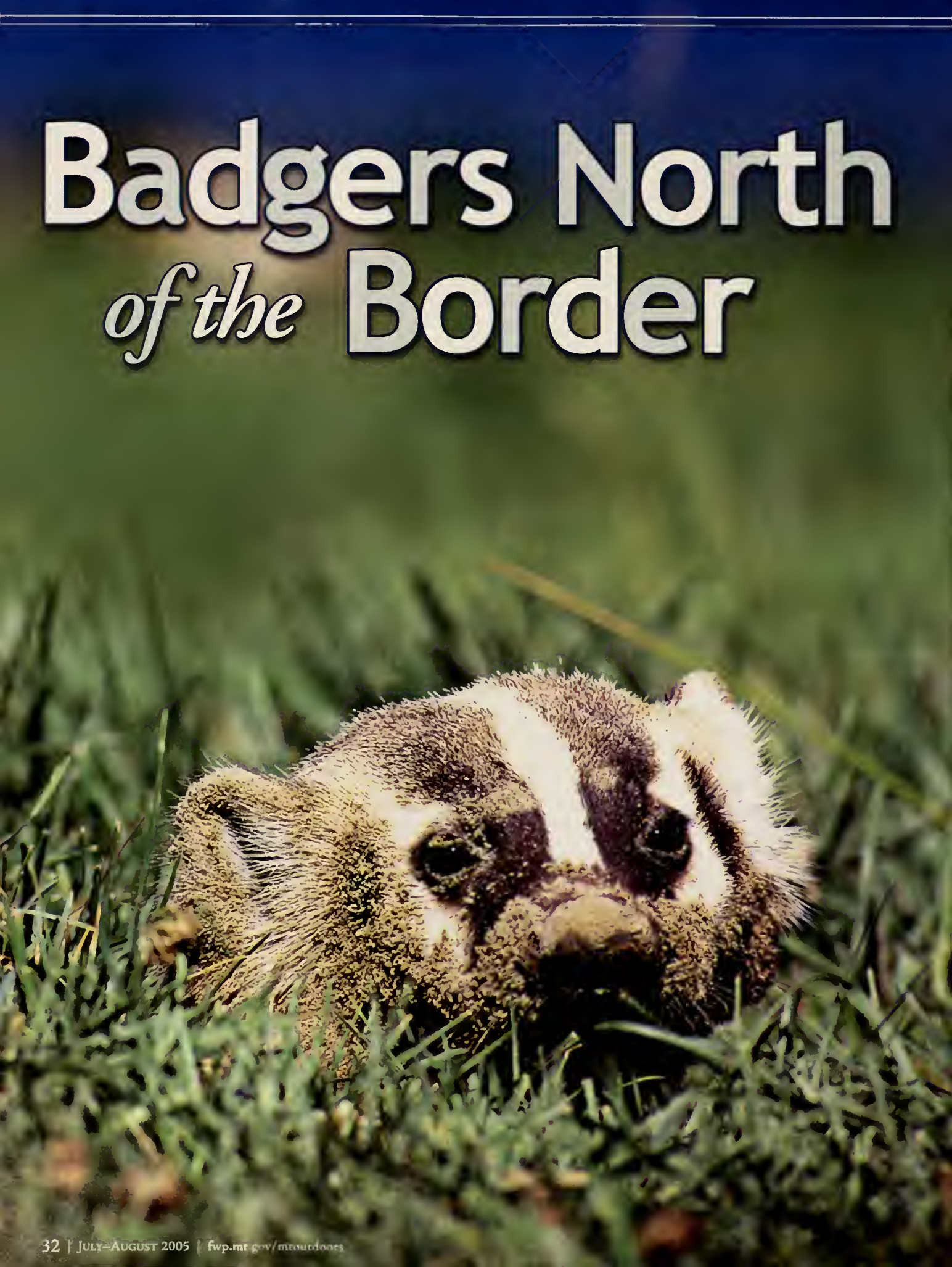
IN SCARCE SUPPLY In addition to barges and walleyes, the Missouri River's water is also essential for cooling power plants, supplying municipalities, and irrigating crops (lower left). Of concern to conservationists is the critical importance of natural flows to maintain habitat for the federally endangered pallid sturgeon (below). Eventually, the rains will return, but until then, people using Fort Peck and other upstream reservoirs can do little but watch the water recede ever farther from shore (bottom).

PHIL FARNES

MONTANA FWP

JEFF HENRY/ROCHE JAUNE PICTURES

Badgers North *of the* Border



How Montana is helping its Canadian neighbors restore a population of this remarkable mammal

Photos and story by **John Fraley** and **Jim Williams**

When Nancy Newhouse began working with badgers in British Columbia a decade ago, she had no idea they were in so much trouble. The Canadian wildlife biologist quickly learned that in the entire southern half of the province, only 200 of the squat, short-legged animals remained.

"We're not sure why," says Newhouse, who was hired by the British Columbia Ministry of Water, Land and Air Protection to head the East Kootenay Badger Project. "But we suspected it was either due to habitat fragmentation or a natural but temporary population decline."

With the help of Montana Fish, Wildlife & Parks biologists and a Montana trapper, Newhouse began reestablishing the badger, a member of the weasel (mustelid) family, in portions of British Columbia's Upper Columbia River Region. She says it's too early to tell if the relocation effort will bolster the province's badger population over the long haul. But Newhouse notes that four female badgers translocated from Montana have already produced litters—an essential development in the wildlife project.

"All these females reproducing in their new habitat is exceptional," she says.

Good exchange rate

Montana became involved in the project in order to help Canadian biologists prevent badgers from disappearing from the Upper Columbia River Region. It was also an opportunity to return a favor. The state has received Columbian sharp-tailed grouse, fishers, and grizzly bears from British Columbia. Montana badgers are of the same genetic stock as British Columbia badgers and likely resist the same diseases.

In 2002 and 2003, biologists and professional trappers from both countries captured 16 badgers using soft-jawed foothold traps near the Lost Trail National Wildlife Refuge in northwestern Montana. The animals were anesthetized and transported to the office of a local veterinarian, who surgically implanted radio transmitters so biologists could follow their movements. The badgers were then released in southern British Columbia into burrows biologists had dug in open grasslands and burned timber areas—habitat similar to the animals' Montana living quarters.

Of the 16 badgers released, one was killed by a predator and three were killed by motor vehicles. Though Newhouse calls the deaths "disappointing," she says that the losses were more than offset by the nine kits raised by the remaining badgers. The biologist fitted five of the young badgers with radio collars, allowing her to track their movements and the location of any that die (to determine the cause of death).

According to Brian Giddings, Montana FWP furbearer coordinator, this is the only badger translocation project ever undertaken in North America. "And so far, the results are encouraging," he says. "The fact that most of the badgers remained in radio telemetry contact and that the females have successfully raised badger kits is a success by any measure."

Newhouse and other biologists suspected the badger decline was due either to habitat fragmentation or a population blip. If habitat loss or fragmentation was to blame, then the relocated animals would not survive over the long-term. However, if the lack of badgers was due only to a random decline in a small population, then recovery could be possible. So far, the fact that relocated badgers are still living and reproducing indicates that the Upper Columbia valley remains capable of supporting badgers.

In addition to restoring badgers to southern British Columbia, Newhouse hopes the relocation project increases public interest in the enigmatic species.

"As a carnivore living in river valleys, badgers are actually around people more than many other predators are," she says. "But because badgers are nocturnal and live underground, most people don't see them and realize how beautiful they are."

Though badgers are generally ignored

WHERE AM I? A badger transplanted from Montana looks out at its new surroundings in southern British Columbia. Biologists with Montana FWP are helping their counterparts in the province to restore the burrowing predator to the Upper Columbia River Region. There, badger numbers have dropped alarmingly low. The new translocation project could help explain why.

in the United States, the animals are becoming highly regarded in Canada, where they are listed as federally endangered. Newhouse says the government's national badger recovery effort has created strong public sentiment for badgers.

"Public education and outreach in recent years seem to have increased the badger's visibility and popularity among Canadians," she says.

Newhouse adds that increased public awareness has created an affinity for badgers even among people who have never seen one. She says they just enjoy knowing the animals are living nearby.

"What I've been finding lately in areas I've worked is that people are getting more and more excited to learn about badgers," she says. "For many Canadians, badgers have become one of the family of animals that share their environment."

"A Singular Animal"

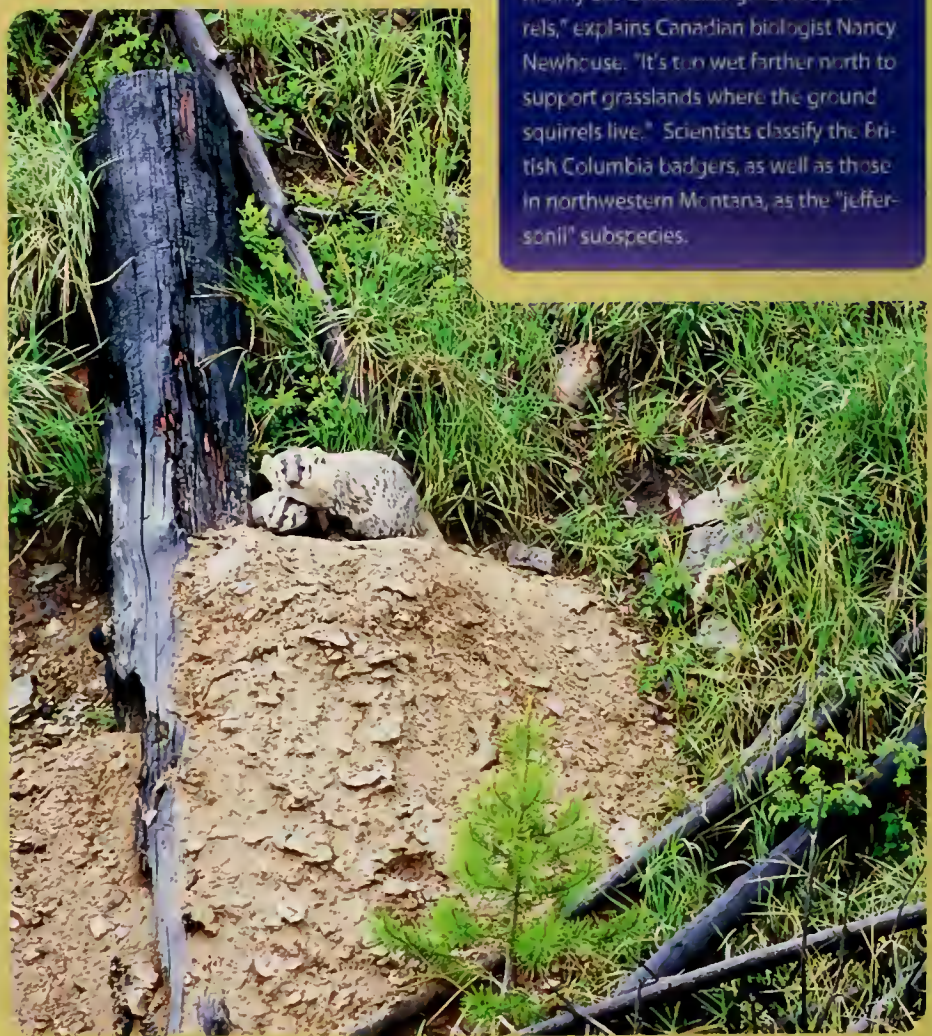
Lewis and Clark were the first Americans to write about the badger, which they saw on July 30, 1804, near today's Omaha, Nebraska. Private Joseph Fields killed one of the odd-looking animals and brought it to Lewis, who skinned and mounted the creature before sending it to President Jefferson. Lewis wrote, "this is a singular animal not common to any part of the united states." Clark added that the badger's shape and size "is like that of a beaver, his head mouth &c. is like a dogs with short ears, his tail and hair like that of a ground hog...his belly is white and the hair short, a white streek from his nose to his sholders...his legs are short and when he moves just sufficient to raise his body above the ground."

The captains also described the badger's long foreclaws and short, shovel-like hind claws used for digging. They noted accurately that the badger "burrows in the ground and feeds on flesh [prairie dogs], bugs and vegetables."

John Fraley in the FWP regional information and education officer in Kalispell, where Jim Williams is the FWP regional wildlife manager.

TRANSCONTINENTAL BURROWERS

The Upper Columbia River Region in Canada is the northern limit of the badger's North American range. "Here, they mainly eat Columbian ground squirrels," explains Canadian biologist Nancy Newhouse. "It's too wet farther north to support grasslands where the ground squirrels live." Scientists classify the British Columbia badgers, as well as those in northwestern Montana, as the "jeffersonii" subspecies.



An Appetite for Angling

BY SAM CURTIS

Some parents and children's book authors seem to misread kids. They expect children to have cuddly feelings about birds, butterflies, and snakes. Writers pen stories of kids chatting with bears and hobnobbing with moose. Mom and Dad smile as they watch Junior engrossed in conversation with a nightcrawler in the backyard.

Those folks never knew my son Will when he was three and began taking an interest in fish. Will was convinced at an early age that you don't talk to fish. You eat them.

It started one day when my eldest son, Patrick, caught a trout in the Anaconda-Pintler Wilderness. After cooking the fish, he cut off the head and slipped it to Will, whose eyes turned greedy and bright. Then, without so much as a may-I-please, Will popped the head into his mouth and began to munch.

My wife's jaw dropped in horror.

What could I say? At least the boy was eating his dinner.

The following summer, Will was eager to get his hands on more fish. On our first camping trip, he began pestering me as soon as the rods came out of the car. While I was putting up the tents, he chanted, "Dad, we gotta go fishing. Come on, Dad." By the time I'd set up camp, he was howling with grief, so I let myself be pulled to the stream.

Once there, all was right with Will's world. As I worked my way up the stream, casting, he puttered alongside the bank, humming to himself, certain I would soon procure a fish for his consumption. This three-year-old was the picture of patience, convinced that going fishing and catching fish were one and the same.

But of course they are not, and it was nearly dark before I finally caught a fish, a plump cutthroat. I let Will hold the trout on the way back to camp, and I must confess, he did chat with it. But their friendship ended as soon as I put the fish on the grill. Will then proceeded to consume the cooked trout with delight, certain now that fishing not only meant catching fish, but also eating them too.

I'd long ago stopped keeping every trout I caught. So on our next fishing trips, I had to tiptoe precariously around Will's newly formed philosophical footing while attempting to preach catch and release. He found the concept distasteful, and sobbed whenever I let a lively trout wiggle back into the water. And he never forgave me for the time he caught me surreptitiously slipping fish from my boat's livewell back into the lake. Given his piscatorial psyche, that may have scarred him for life.

Then came the day he learned that even a conservation-minded angler like myself is occasionally forced to keep his catch. After a small rainbow took my fly deep in its throat, I had trouble removing the hook. Blood pulsed from its gills.

"He's hurt bad," I said to Will. "We'll have to keep this one."

Oh foolish father!

Afterwards, whenever I had a fish on the line and before Will even saw it, he ran up and down the bank yelling, "He's hurt real *bad*, Dad. He's hurt *bad*." Whenever I tied on a fly he said, "Put on a *big* hook, Dad. Put on a *sharp* one."

Of course, it is my miserable luck to live 50 feet from a trout stream. My son wanted to fish all the time, so he was always tugging on my fingers or pushing me toward the door, knowing my fly rod hung right there on the porch wall. He didn't think much of my having to work for a living or that I might want to spend time with other members of the family. After all, there were fish right outside the door.

Things came to a head one Sunday. Will had badgered me to the stream and coaxed me from pool to pool. I tried to keep fish off my line, dreading the inevitable battle between me and my youngest son, all the time explaining we wouldn't have any fish left in the stream if we kept eating them.

Of course, luck wasn't with me. I hooked a trout.

"He's hurt *bad*," Will said, hoping the mantra would convince me to harvest the catch. But I just couldn't do it. While mouthing the virtues of catch and release, I quietly let the brookie slip into the stream.

That was just too much for the boy.

Will dissolved into a blubbering mound of incoherence right there in the streamside grass. Tears streamed down his cheeks and snot bubbled from his nose. I carried him as far as the porch, where, refusing to go into the house, he slumped like a disaster victim.

"You're a mean dad," he told me. "You're so mean."

He may have been correct. But back then I thought I was doing the right thing. And I suppose my actions were justified over the years as Will eventually came around and became less of a fish consumer and more of a fish conserver. Now a teenager, he has evolved into a fine fly fisherman, dedicated to catch and release.

Occasionally he keeps, cooks, and eats a trout. But these days his voracious appetite is primarily for the fishing, not the fish.

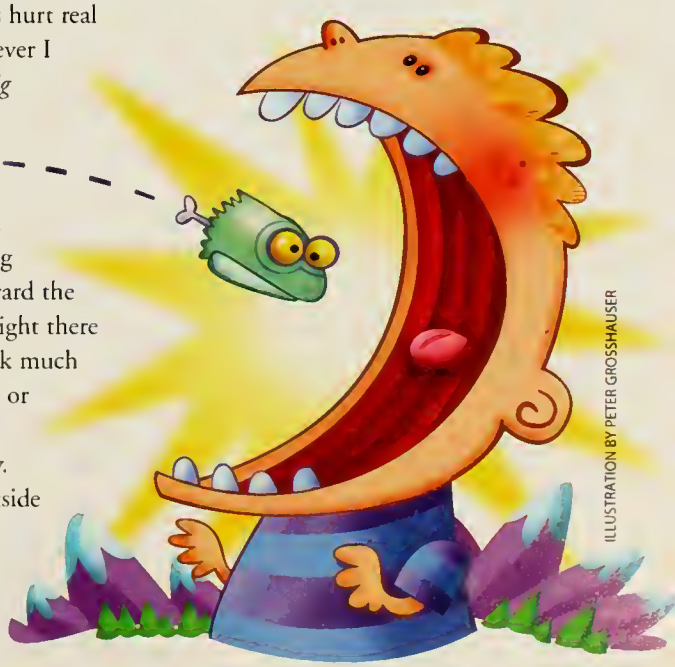


ILLUSTRATION BY PETER GROSSHAUSER

Freelance writer Sam Curtis just outside the Greater Bozeman Area.

JULY

1, 8, 15, 22, 29 Interpretive Walks, *Giant Springs State Park, 8 a.m.* (406) 454-5840.

1, 2, 3 Discover Travelers' Rest, *Travelers' Rest State Park, 10 a.m–4 p.m.* Reenactments, guided tours, and more. (406) 273-4253.

1, 2, 8, 15, 22, 29 Interpretation at Rainbow Falls, *Giant Springs State Park, 1 p.m.* History of the falls. (406) 454-5840.

1, 23 Montana's State Parks, *Fort Owen State Park, 1 p.m.* Hear stories of west-central Montana parks. (406) 542-5517.

1, 8, 15, 22, 29 Ancient Highways and Native Byways, *Salmon Lake State Park, 8 p.m.* Learn about the old trails in this historic area. (406) 677-6804.

2, 9, 16, 23, 30 North Shore Interpretive Hikes, *Giant Springs State Park, 9 a.m.* Retrace Captain Lewis's path. (406) 454-5840.

2 Medicine of Lewis and Clark, *Bannack State Park, 2 p.m.* Bleeding? Purging? What were the captains *thinking*? (406) 834-3413.

2 The York of Myth and Fact, *Missouri Headwaters State Park, 7 p.m.* "York" shares his life story as a slave on the Lewis and Clark Expedition. (406) 285-3610.

3, 10, 17, 24, 31 Children's Programs, *Giant Springs State Park, 1 p.m.* A wild time for kids ages 5 to 12. (406) 454-5840.

6, 13, 20, 27 Summer Campfire Program, *Makoshika State Park, 9:30 a.m.* Great lectures on various topics. (406) 377-6256.

7, 14, 21, 28 Wednesday Lunch Programs, *Giant Springs State Park, 12:45 p.m.* Presentations on John Colter, great horned owls, blue flax, the fur trade, and more. (406) 454-5840.

7, 14, 21, 28 Hot Topics, *Giant Springs State Park, 8 p.m.* Knapweed and more. (406) 454-5840.

JULY 16 The Changing Image of Wolves
Missouri Headwaters State Park, 7 p.m.

Carolyn Sime, FWP wolf coordinator, discusses how culture influences our perception of wolves, and how the image of these controversial predators has changed over time. Bring a chair and enjoy a marshmallow roast social after the program. Call (406) 285-3610 for information.

9 Living with the Land, *Missouri Headwaters State Park, 7 p.m.* Indian customs. (406) 285-3610.

9 Montana Originals, *Bannack State Park, 7 p.m.* Great music featuring renditions of traditional cowboy and western songs. (406) 834-3413.

9, 16, 23, 30 The Great Falls, *Giant Springs State Park, 1 p.m.* History of the waterfalls. (406) 454-5840.

15 Montana's State Parks, *Salmon Lake State Park, 8 p.m.* Hear stories of west-central Montana parks. (406) 677-6804.

16, 17 Bannack Days, *Bannack State Park, all day.* This is the big one! (406) 834-3413.

16 Montana's State Parks, *Council Grove State Park, 8 p.m.* Hear stories of west-central Montana parks. (406) 542-5500.

22, 23, 24 Festival of Discovery, *Missouri Headwaters State Park, all day.* Family fun. (406) 285-3610.

23 Old Time Fiddle Music, *Missouri Headwaters State Park, 7 p.m.* Songs, dancing, and a marshmallow roast. (406) 285-3610.

23 Rattlesnakes! *Bannack State Park, 7 p.m.* Separating fact from fiction. (406) 834-3413.

29 Montana's State Parks, *Beavertail Hill State Park, 8 p.m.* Hear stories of west-central Montana parks. (406) 542-5500.

30 Original Music and Poetry, *Bannack State Park, 2 p.m.* Singer, songwriter, and poet Val Prophet. (406) 834-3413.

30 Captain Clark's Birthday Party, *Missouri Headwaters State Park, 5:30–9 p.m.* Celebrate his 235th birthday. (406) 285-3610.

AUGUST

3, 10, 17, 24, 31 Wednesday Lunch Programs, *Giant Springs State Park, 12:15 p.m.* Various topics. (406) 454-5840.

4, 11, 18, 25 Hot Topics, *Giant Springs State Park, 8 p.m.* Meth labs and more (406) 454-5840.

5, 12, 19, 26 Interpretive Walks, *Giant Spring State Park, 8 a.m.* See the Missouri River Valley during the time of Lewis and Clark. (406) 454-5840.

5, 12, 19, 26 Rainbow Falls Program, *Giant Springs State Park, 1 p.m.* History of the falls. (406) 454-5840.

5 Montana's State Parks, *Fort Owen State Park, 1 p.m.* Hear stories of west-central Montana parks. (406) 542-5517.

5, 6 Theater in the Park, *Makoshika State Park, 5 p.m., $10.* Dinner, music, and theater surrounded by dinosaur bones. (406) 377-6256.

5 Ancient Highways and Native Byways, *Salmon Lake State Park, 8 p.m.* Learn about the old trails in this historic area. (406) 677-6804.

6, 13, 20, 27 North Shore Interpretive Hikes, *Giant Springs State Park, 9 a.m.* Retrace Captain Lewis's path. (406) 454-5840.

6 Gold Panning, *Bannack State Park, 2 p.m.* For fun and profit. (406) 834-3413.

6 Native Flute Playing, *Missouri Headwaters State Park, 7 p.m.* Beautiful, melodic, haunting. (406) 285-3610.

7, 14, 21, 28 Children's Programs, *Giant Springs State Park, 1 p.m.* A wild time for kids ages 5 to 12. (406) 454-5840.

12, 18 Montana's State Parks, *Salmon Lake State Park, 8 p.m.* Hear stories of west-central Montana parks. (406) 677-6804.

13 Community Artists Day, *Giant Springs State Park, all day.* Watch artists or create your own masterpiece. (406) 454-5840.

13 The Power of the Drum, *Missouri Headwaters State Park, 7 p.m.* Native American drum and dance group. (406) 285-3610.

13 Honky-Tonk Piano, *Bannack State Park, 7 p.m.* Late 19th-century music. (406) 834-3413.

13, 19 Montana's State Parks, *Beavertail Hill State Park, 8 p.m.* Hear stories of west-central Montana parks. (406) 542-5500.

20 Spirit Tales, *Bannack State Park, 2 p.m.* Scary stories. (406) 834-3413.

20 Thomas Jefferson and Music, *Missouri Headwaters State Park, 7 p.m.* The president's musical life, with performances. (406) 285-3610.

27 Dugout Canoes, *Missouri Headwaters State Park, 7 p.m.* Building a dugout canoe, 1800s-style. (406) 285-3610.

27 Cowboy Poetry, *Bannack, 7 p.m.* Rick Kuntz. (406) 834-3413.

Franklin's Gull
Larus pipixcan

Who would expect the nickname "prairie dove" to belong to a gull? Yet the name definitely applies to the Franklin's gull, a bird that breeds in the wet parts of the prairie and flies with the buoyancy of a dove.

And the Franklin's part? Sir John Franklin, an explorer looking for the Northwest Passage, headed the Arctic expedition on which the gull was first collected for science.

APPEARANCE

Take your basic gull and shrink it a bit to 14 or 15 inches. Give it a black hood, a heavy white crescent above and below each eye, and a red bill. Make the wings short and maneuverable, add splashes of white to the black wingtips, and—*Voila!*—you have a good approximation of a Franklin's gull dressed for the breeding season. To change to the winter costume, give the bird a smaller hood placed on the back of the head and make the bill black.

RANGE

The Franklin's gull breeds mainly in Canada's Prairie Provinces, Montana, the Dakotas, and western Minnesota. The birds generally stick to the eastern part of Montana but sometimes wander west after the breeding season.

Franklin's gulls migrate much farther south than most gull species, wintering chiefly on the Pacific Coast of Peru.

HABITAT

The Franklin's gull is as close to a landlubber as a gull gets, living on the prairies rather than the seacoast or lakes during the breeding season. However, these birds don't have webbed feet for nothing. Once they reach the grasslands in spring, the gulls look for large marshes where their chicks will be safe until able to fly.

Five areas in Montana host breeding colonies of Franklin's gulls: Freezout Lake Wildlife Management Area; Benton Lake, Bowdoin, and Red Rock Lakes national wildlife refuges; and the Manning Lake Complex northwest of Culbertson.

FOOD

Franklin's gulls also break the mold when it comes to food. Unlike most gull species, Franklin's aren't pirates that swipe food, nor are they predators that gobble chicks of any sort.

Instead, they mainly eat insects such as midges, grasshoppers, and grubs. They also consume earthworms, sometimes following a farmer's plow to pluck the morsels from the overturned dirt. Rarely do you find Franklin's gulls scavenging at dumps.

REPRODUCTION

Franklin's gulls nest by the thousands in noisy colonies that can often be heard more than a mile away. Each breeding pair builds a nest on cattails and bulrushes surrounded by shallow water that keeps the eggs and chicks safe from most predators. The floating nest decays below the water line, so the birds must constantly add material. In fact, stealing from other nests is so common among Franklin's gulls that an unguarded nest can disappear in just a few hours.

All rhe female gulls in a colony lay rheir three eggs at about the same time. The eggs hatch in about 25 days, and 35 days afrer that the chicks begin to fly. Once the young have been airborne for two weeks, the gulls abandon the colony and spread to large-water areas such as Fort Peck and Canyon Ferry lakes.

One of the largest Franklin's populations in Montana is at Benton Lake, which had 50,000 gulls when they were last counted in August 1998.

STATUS IN MONTANA

The Franklin's gull is considered a species of concern in Montana. "That status does not necessarily mean the population is dropping," says Kristi DuBois, FWP Native Species Program coordinator. "It's more about the species having just a few breeding sites. All its eggs are in one basket, so to speak."

DuBois says the combination of wetland loss over the past century and the drought of recent years is reason to keep watch on the gull's status. Biologists are also concerned that the three lakes containing Montana's largest Franklin's gull populations—Benton, Bowdoin, and Freezout—all have soils high in selenium, a natural trace mineral that can be faral to birds at high levels. When lake levels are low, DuBois says, water evaporates more quickly than usual, concentraring the selenium.

BY CRAIG AND LIZ LARCOM
Freelance writers and photographers Craig and Liz Larcom live in Great Falls.

ROCK OF AGES

Medicine Rocks has been attracting people for hundreds of years. American Indians came here on vision quests, and tourists today visit the site, now a state park, to marvel at the rock formations. Pictured here are picnickers, circa 1905, from nearby Ekalaka. Learn more about the sacred site in our story on page 18. Photo courtesy of the Carter County Museum.

Montana Outdoors

Produced by Montana Fish, Wildlife & Parks

Montana Fish, Wildlife & Parks

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Montana Outdoors July–August 2005

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